

# WOAH Reference Laboratory Reports Activities 2025

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## LABORATORY INFORMATION

*Name of disease (or topic) for which you are a designated WOAH Reference Laboratory:	Trichinellosis
*Address of laboratory:	Department of Infectious Diseases, Istituto Superiore di Sanità, viale regina Elena 299. 00161 ROMA. Italy
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*E-mail address:	gianluca.marucci@iss.it
Website:	<a href="https://www.iss.it/en/">https://www.iss.it/en/</a>
*Name (including Title) of Head of Laboratory (Responsible Official):	Prof. Anna Teresa Palamara
*Name (including Title and Position) of WOAH Reference Expert:	Dr. Gianluca Marucci, PhD, Senior Scientist at the Department of Infectious Diseases
*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
<b>Indirect diagnostic tests</b>			
Indirect ELISA on human serum	No	5	1
Western blot on human serum	No	1	0
Indirect ELISA on swine serum	Yes	0	0
Western blot on swine serum	No	0	0
Indirect ELISA on hunting dog serum	No	270	0
Western blot on hunting dog serum	No	270	0
<b>Direct diagnostic tests</b>			
Artificial digestion of muscle tissue	Yes	10	0
Multiplex PCR	No	64	339

## TOR2: REFERENCE MATERIAL

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

Yes

Type of reagent available	Related diagnostic testing	Produced/ imported	Quantity supplied nationwide (ml, mg)	Quantity supplied at international level (ml, mg)	Name of beneficiary

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WOAH Member Countries

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
Mouse carcass infected with <i>Trichinella</i> spp.	Artificial digestion	Produced	7 mouse carcasses	19 mouse carcasses	10	CROATIA, DENMARK, ESTONIA, GERMANY, IRELAND, ITALY, NORWAY, ROMANIA, SWEDEN, UNITED KINGDOM,
Pools of <i>Trichinella</i> spp. muscle larvae in alcohol	Multiplex PCR	Produced	1 vial	11 vials	4	GERMANY, ITALY, POLAND, SLOVENIA,

4. Did your laboratory produce vaccines?

No

5. Did your laboratory supply vaccines to WOAH 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 WOAH 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 WOAH Standards for the designated pathogen or disease?

## 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
BULGARIA	2025-07-17	Multiplex PCR	42	0
CROATIA	2025-11-11	Multiplex PCR	1	0
FRANCE	2025-10-30	Multiplex PCR	6	0
SPAIN	2025-02-05	Multiplex PCR	23	0
SPAIN	2025-02-21	Multiplex PCR	27	0
SPAIN	2025-03-26	Multiplex PCR	2	0
SPAIN	2025-04-14	Multiplex PCR	2	0
SPAIN	2025-05-13	Multiplex PCR	59	0
SPAIN	2025-05-21	Multiplex PCR	155	0
SPAIN	2025-07-10	Multiplex PCR	3	0
SPAIN	2025-12-18	Multiplex PCR	15	0
SWEDEN	2025-02-05	Multiplex PCR	3	0
SWEDEN	2025-04-07	Indirect ELISA on human serum	1	0

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

Yes

Name of the WOAH Member Country receiving a technical consultancy	Purpose	How the advice was provided
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ALBANIA	Support in identifying the cause that led to failure in the proficiency testing (PT) for the detection of Trichinella larvae in meat	Videoconference
BELGIUM	Identification of the best cut of pork to be used for preparing samples for proficiency testing for the detection of Trichinella larvae in meat	by email
BELGIUM	Transparency of sediment obtained after artificial digestion of meat samples tested for the presence of Trichinella larvae	by email
BELGIUM	Collecting sediment from the sedimentation funnel during artificial digestion of meat samples for the detection of Trichinella larvae	by email
BELGIUM	Possibility of re-digesting the undigested muscle tissue remaining on the sieve after testing meat samples for the detection of Trichinella larvae	by email
BELGIUM	Concerns observed in a laboratory designated for official controls on the detection of Trichinella larvae in meat	by email
BELGIUM	Survival of Trichinella larvae in colture medium at different temperatures	by email
BELGIUM	Protocol for the expeirmental infection of mice and rats with Trichinella muscle larvae	by email
GERMANY	Skin irritations observed in pigs experimentally infected with high number of Trichinella larvae	by email
GERMANY	Use of led illumination in a stereo microscope intended for the detection of Trichinella larvae	by email
GREECE	Concentration of pepsin to be used in artificial digestion for the detection of Trichinella larvae in meat samples	by email
HUNGARY	Testing cured sausages for the presence of Trichinella larvae using artificial digestion	by email
HUNGARY	Obligation to test ostrich meat for the presence of Trichinella larvae	by email
HUNGARY	Available kits for DNA purification from Trichinella larvae	by email
ICELAND	Use of liquid pepsin according to ISO 18743:2015/Amd 1:2023	by email
LATVIA	In vivo maintenance of Trichinella larvae	by email
SPAIN	Setting up multiplex PCR for the identification of Trichinella larvae at the species/genotype level	videoconference
SWEDEN	Testing frozen meat samples by artificial digestion for the detection of Trichinella larvae	by email
SWEDEN	EU regulations relevant to Trichinella	by email
SWEDEN	Use of PrioCHECK Trichinella AAD to test meat for the presence of Trichinella larvae	by email

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SWEDEN	Additional sedimentation step during routine testing of meat samples for the detection of <i>Trichinella</i> larvae	by email
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## TOR5: COLLABORATIVE SCIENTIFIC AND TECHNICAL STUDIES

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

No

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

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:

Epizootiological data relevant to *Trichinella* infection are collected in the database of the International *Trichinella* Reference Centre available at the website:  
<https://trichinella.iss.it/>

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:

Our laboratory collected epizootiological data related to *Trichinella*. The data included the number of infected animals, geographical distribution, affected species, and strain characterization. The processed data are disseminated upon request, as well as through international reports, scientific publications, and conference communications.

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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- G. Marucci, C. Raso, E. Borgogni, F. Celani, I. Tartarelli, S. Cherchi, A. Di Giambattista, P. Calderini, A. Casulli. *First report of T. spiralis in a wolf in Italy: An increasing health concern?* *Food and Waterborne Parasitology*, Volume 38, 2025, <https://doi.org/10.1016/j.fawpar.2024.e00253>.
- Ricci A, Bezerra-Santos MA, Ludovisi A, Tartarelli I, Marucci G, Casulli A, Sgroi G, Veneziano V, Lia RP, Mendoza-Roldan JA, Otranto D. *Seroprevalence of Trichinella spp. in hunting dogs from southern Italy.* *Vet Parasitol Reg Stud Reports.* 2025 Jun;61:101276. doi: 10.1016/j.vprsr.2025.101276.
- Torreggiani, C.; Garbarino, C.; Pupillo, G.; De Lorenzi, G.; Sampieri, M.; Massella, E.; Rugna, G.; Reggiani, A.; Rubini, S.; Frasnelli, M.; et al. *Occurrence of Trichinella spp. in Grey Wolves and Red Foxes: Insights from Wild Mammal Surveillance in Emilia-Romagna (Italy).* *Animals* 2025, 15, 3532. <https://doi.org/10.3390/ani15243532>

b) International conferences:

c) National conferences:

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20th Workshop of the National Reference Laboratories for Parasites, held at the Istituto Superiore di Sanità, Rome, Italy, October 28-29, 2025

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

1

Provision of support to the European Food Safety Authority and European Centre for Disease Prevention and Control for the production of the Chapter Trichinella, 2025. The European Union One Health 2024 Zoonoses report. EFSA J. 2025 Dec 9;23(12):e9759. doi: 10.2903/j.efsa.2025.9759

## TOR7: SCIENTIFIC AND TECHNICAL TRAINING

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

Yes

a) Technical visit : 0

b) Seminars : 7

c) Hands-on training courses: 2

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
B	ESTONIA	1
B	GREECE	1
B	NORTH MACEDONIA (REP. OF)	1
C	NORWAY	1
B	PORTUGAL	1
B	SWEDEN	2
B	UNITED KINGDOM	1
C	UNITED KINGDOM	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	17025 accreditation certificate	17025 accreditation certificate.pdf
ISO 17043	17043 accreditation certificate	17043 accreditation certificate.pdf

19. Is your quality management system accredited?

Yes

Test for which your laboratory is accredited	Accreditation body
Detection of anti-Trichinella antibodies in swine serum by indirect ELISA (MI-01)	Accredia
Identification of Trichinella muscle stage larvae at the species level by Multiplex PCR (MI-02)	Accredia
Detection of anti-Trichinella antibodies in human serum by indirect ELISA (MI-03)	Accredia
Identification of Trichinella spp. proteins recognized by specific IgG in serum of infected pigs by western blotting (MI-13)	Accredia
Identification of Trichinella spp. proteins recognized by specific IgG in serum of humans with trichinellosis by Western blotting (MI-16)	Accredia
Proficiency Testing on artificial digestion to detect Trichinella larvae in meat samples	Accredia
Proficiency Testing on identification of Trichinella larvae at the species level	Accredia

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

Yes

see Chapter 1.1.4 Biosafety and biosecurity: Standard for managing biological risk in the veterinary laboratory and animal facilities

## TOR9: SCIENTIFIC MEETINGS

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

No

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?

Yes

NETWORK/DISEASE	ROLE OF YOUR LABORATORY (PARTICIPANT, ORGANISER, ETC)	NO. PARTICIPANTS	PARTICIPATING WOA?H REF. LABS
Trichinellosis	sharing information	2	Dr. Brad Scandrett Canadian Food Inspection Agency 116 Veterinary Road Saskatoon Saskatchewan S7N 2R3 Saskatoon

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

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 during the past 2 years?

Yes

Purpose for inter-laboratory test comparisons <sup>1</sup>	Role of your reference laboratory (organizer/participant)	No. participating laboratories	Name of the test	WOA?H Member Countries
Assess the participants' abilities to detect Trichinella larvae in muscle tissue	Organizer	34	Proficiency Testing on artificial digestion to detect Trichinella larvae in meat samples	ALBANIA, AUSTRIA, BELGIUM, BOSNIA AND HERZEGOVINA, BULGARIA, CROATIA, CYPRUS, CZECH REPUBLIC, DENMARK, ESTONIA, FINLAND, FRANCE, GERMANY, GREECE, HUNGARY, ICELAND, IRELAND, ITALY, LATVIA, LITHUANIA, MALTA, NORTH MACEDONIA (REP. OF), NORWAY, POLAND, PORTUGAL, ROMANIA, SERBIA, SLOVAKIA, SLOVENIA, SPAIN, SWEDEN, SWITZERLAND, THE NETHERLANDS, UNITED KINGDOM,
Assess the participants' abilities to identify Trichinella muscle larvae at the species level	Organizer	24	Proficiency Testing on identification of Trichinella larvae at the species level	AUSTRIA, BELGIUM, CROATIA, CZECH REPUBLIC, DENMARK, ESTONIA, FINLAND, FRANCE, GERMANY, GREECE, LATVIA, LITHUANIA, NORTH MACEDONIA (REP. OF), NORWAY, POLAND, PORTUGAL, ROMANIA, SERBIA, SLOVAKIA, SLOVENIA, SPAIN, SWITZERLAND, THE NETHERLANDS,

## TOR12: EXPERT CONSULTANTS

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

No

29. Additional comments regarding your report:

No