

# WOAH Reference Laboratory Reports Activities 2024

This report has been submitted: 24 janvier 2025 11:05

## LABORATORY INFORMATION

<b>*Name of disease (or topic) for which you are a designated WOA Reference Laboratory:</b>	Echinococcosis (Echinococcus granulosus and E. multilocularis)
<b>*Address of laboratory:</b>	Istituto Zooprofilattico Sperimentale (IZS) of Sardinia, National Reference Laboratories for Cystic Echinococcosis (CE) - Via Duca degli Abruzzi, 8 (Administration) - Via Vienne 2 (Laboratories) 07100 - Sassari, Italy
<b>*Tel:</b>	+39 079 28 92 200 and +39 079 28 92 325
<b>*E-mail address:</b>	giovanna.masala@izs-sardegna.it
<b>Website:</b>	<a href="https://www.izs-sardegna.it/">https://www.izs-sardegna.it/</a>
<b>*Name (including Title) of Head of Laboratory (Responsible Official):</b>	Dr Giovanna Masala, DVM
<b>*Name (including Title and Position) of WOA Reference Expert:</b>	Dr Giovanna Masala, DVM
<b>*Which of the following defines your laboratory? Check all that apply:</b>	Ministerial and Regional Institute of Health

## 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	
Indirect diagnostic tests		Nationally	Internationally
ELISA anti IgG of E.g. and E.m. for Human serum/plasma (CeNRE 08)	No	105	0
Immunoblotting anti IgG of E.g. and E.M. for Human serum/plasma (CeNRE 07)	No	47	0

**Giovanna Masala - - ITALY**

Immunochromatographic test anti IgG of E.g. for Human serum/plasma (CeNRE 15)	No	48	0
<b>Direct diagnostic tests</b>		<b>Nationally</b>	<b>Internationally</b>
CeNRE 03 - Sequencing analysis	No	374	0
CeNRE 04 - E.g., E.m. and Tenia identification by PCR on Cestode eggs	Yes	444	0
CeNRE 05 - Canine intestinal scraping or "Shanking in a vessel" techniques	Yes	0	0
CeNRE 06 - Sedimentation counting techniques of canine faeces and microscopic examination	Yes	0	0
CeNRE 09 - Identification of E.g. s.s. by PCR for gene CAL	No	153	0
CeNRE 10 - Tecnica della sedimentazione e flottazione per la diagnosi parassitologica di uova di cestodi in feci di cani	Yes	257	0
CeNRE 11 - Coproparasitological analysis of Cestode eggs after centrifugation	Yes	0	0
CeNRE 01/12 - Identification of E.g. cysts in organs of different species	Yes	32	0
CeNRE 13 - Identification of E.g. cysts in human organs	No	7	0
CeNRE/14- Copro PCR per la ricerca di sequenze geniche specifiche di E. granulosus s. l.	Yes	0	0

## 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
K+ DNA E.g.s.s	Identification of E.g. s.s. by PCR for gene CAL (CeNRE 09)	Produced	27aliquotsx50 µl	0	13	ITALY,

4. Did your laboratory produce vaccines?

No

5. Did your laboratory supply vaccines to WOA Members?

No

## 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 WOA Standards for the designated pathogen or disease?

No

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

No

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

No

## TOR4: DIAGNOSTIC TESTING FACILITIES

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

No

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
IRAN	Research project	email, telephone, whats up, zoom
ITALY	Research project	email, telephone, whats up, zoom
PAKISTAN	Research project	email, telephone, whats up, zoom
NIGER	Research project	email, telephone, whats up, zoom
TUNISIA	Research project	email, telephone, whats up, zoom

## 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
Genotype and haplotype identification of Echinococcus granulosus isolates from intermediate host in Islamabad, Pakistan	3 years	Identify new genotype and haplotype in Pakistan	Prof. Haroon Ahmad and Dr Huma Khan, Dr. Najam Farooq, University of Islamabad (COMSAT), Islamabad, Pakistan	PAKISTAN
Study of Echinococcus granulosus on		Improve knowledge on	Dr Emmanuel Jolaoluwa Awosanya, Department of	

**Giovanna Masala - - ITALY**

environment, intermediate and definitive host from various matrix	3 years	Echinococcus granulosus in Nigeria, Africa	Veterinary Public Health and Preventive Medicine, University of Ibadan, Ibadan 200005, Nigeria.	NIGER
Multicentre study "Contamination of vegetables for human consumption by Em/Eg" in European lettuce and barries"	2 years	Risk evaluation of E.granulosus presence in lettuce and barries for human consumption	Dr Gerald Umhang Laboratoire, Laboratoire de la rage et de la faune sauvage de Nancy, ANSES, Malzéville cedex	FRANCE
Set up diagnostic methods on copro diagnosis	2 years	Standardization of methods and evaluation and comparison of results for interlab reproducibility	Dr Jacek Karamon DVM, PhD, Department of Parasitology and Invasive Diseases, National Veterinary Research Institute, Pulawy	POLAND
Development of new methods for C.E. diagnostic.	3 years	Development of ne diagnostic methods for C.E.	Dr Adriano Casulli, Dr Azzurra Santoro, Dr Federica Santolamazza, Istituto Superiore di Sanità, ISS	ITALY
Cystic echinococcosis: clinical, immunological and biomolecular investigations on patients from Sardinia	5 years	Detect the real prevalence of Echinococcosis and molecular investigation in humans from Sardinia	Prof. Porcu Alberto, Masala Salvatore, Mastrandrea Scilla, Prof. Cossu antonio, Hospital network of Sardinia	ITALY
Diagnosis and determination of the prevalence of E. granulosus on samples from Tunisia	3 years	Detect the real prevalence of Echinococcosis and molecular investigation in Tunisia	Dr. Ben Smida Boubaker	TUNISIA
Diagnosis and determination of the prevalence of E. granulosus on samples from Algeria	3 years	Detect the real prevalence of Echinococcosis and molecular investigation in Algeria	Dr. Housseem Samari	ALGERIA

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

Yes

**Research need : 1**

**Please type the Research need:** All know diagnostic methods may be listed in the chapter of the Terrestrial Manuals

**Relevance for WOA** Disease Control, Standard Setting,

**Relevance for the Code or Manual** Manual,

**Field** Diagnostics,

**Animal Category** Terrestrial,

**Disease:**

Echinococcosis (Echinococcus granulosus and E. multilocularis)

**Kind of disease (Zoonosis, Transboundary diseases)** Zoonosis,

**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:** Chapter 3.1.6. Echinococcosis (infection with Echinococcus granulosus and with E. multilocularis) (version adopted in May 2022)

**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:

Our Laboratories are designed to supervise data for monitoring, surveillance and control programmes system in the ambitus of the National Informative System of Zoonosis (SINZOO).

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:

All data related to zoonoses have been collected according to Directive 2003/99/CE and have been sent to EFSA Member State through a specific Web Site. Later, data related to animals have been managed by EFSA and Zoonoses Collaboration Center (ZCC) for preparation of a report, whereas, data related to humans have been managed by Center for Disease Prevention and Control (ECDC).

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:

6

• Soleymani N, Sadr S, Santucci C, Rahdar A, Masala G, Borji H. Evaluation of the In-Vitro Effects of Albendazole, Mebendazole, and Praziquantel Nanocapsules against Protoscolices of Hydatid Cyst. Pathogens. 2024 Sep 12;13(9):790. doi: 10.3390/pathogens13090790. PMID: 39338980; PMCID: PMC11435210.

## Giovanna Masala - - ITALY

- Hajjafari A, Sadr S, Santucci C, Masala G, Bayat M, Lotfalizadeh N, Borji H, Partovi Moghaddam S, Hajjafari K. *Advances in Detecting Cystic Echinococcosis in Intermediate Hosts and New Diagnostic Tools: A Literature Review*. *Vet Sci*. 2024 May 21;11(6):227. doi: 10.3390/vetsci11060227. PMID: 38921974; PMCID: PMC11209443.
- Santucci C, Peruzzu A, Fara AM, Cossu A, Kronenberg PA, Deplazes P, Masala G. *Immunohistochemistry as a Reliable Tool for the Diagnosis of Cystic Echinococcosis in Patients from Sardinia, Italy-A Confirmatory Study*. *Diseases*. 2024 Apr 26;12(5):84. doi: 10.3390/diseases12050084. PMID: 38785739; PMCID: PMC11119186.
- Drocchi G, Santucci C, Mastrandrea S, Sanguedolce F, Madonia M. *Diagnosis and treatment of unusual multiorgan Echinococcus hydatid cysts*. *Curr Urol*. 2024 Mar;18(1):75-77. doi: 10.1097/CU9.0000000000000130. Epub 2022 Aug 31. PMID: 38505159; PMCID: PMC10946642.
- Santucci C, Bozzi E, Profili S, Porcu A, Masala G, Babudieri S, Mastrandrea S. *Investigation of patients with new infection of echinococcal cyst in Sardinia, Italy*. *Diagn Microbiol Infect Dis*. 2024 May;109(1):116224. doi: 10.1016/j.diagmicrobio.2024.116224. Epub 2024 Feb 17. PMID: 38382287.
- Bonelli P, Serra E, Dei Giudici S, Peruzzu A, Crotti S, Danesi P, Carvelli A, Piseddu T, Masala G. *Molecular phylogenetic analysis of Echinococcus granulosus sensu lato infecting sheep in Italy*. *Acta Trop*. 2024 Apr;252:107151. doi: 10.1016/j.actatropica.2024.107151. Epub 2024 Feb 16. PMID: 38367944.

### b) International conferences:

3

- Cinzia Santucci. *Achievements, outcomes and perspectives of the NRL for Echinococcosis after fruitful years of cooperation with hyperendemic countries*. 19th Workshop of the National Reference Laboratories for Parasites 6-7 November 2024.
- Peruzzu A., Bonelli P, Masu G., Senes M., Cossu A., Kronenberg PA., Deplazes P, Masala G., Santucci C. *Immunohistochemistry as a reliable tool for the diagnosis of Cystic Echinococcosis in patients from Sardinia, Italy-A confirmatory study*. Workshop of the National Reference Laboratories for Parasites 6-7 November 2024.
- Gaia Muroi. *Updates on Echinococcosis*. Trans-Mediterranean Zoonosis prevention surveillance Network.

### c) National conferences:

2

- Piero Bonelli. *Molecular phylogenetic analysis of Echinococcus granulosus sensu lato infecting sheep in Italy*. XXXIII Congresso Nazionale della Società Italiana di Parassitologia, Padova 18-21 giugno 2024.
- Giovanna Masala. *Aggiornamenti epidemiologici sull'Echinococcosi Cistica in Italia*. Simposio SIPAOC: Metacestodosi Zoonosiche dei piccoli ruminanti: controllo e risvolti socioeconomici in un'ottica One Health. Sassari 18/09/2024.

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

## TOR7: SCIENTIFIC AND TECHNICAL TRAINING

17. Did your laboratory provide scientific and technical training to laboratory personnel from other WOA 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)	
UNI CEI EN ISO/IEC 17025:2005	PDF	Quality System Certification exp 29.04.2027.pdf

19. Is your quality management system accredited?

Yes

Test for which your laboratory is accredited	Accreditation body
Identification of E.g. cysts in organs of ovines (CeNRE 01)	ACCREDIA
Identification of E.g. s.s. by PCR for gene CAL (CeNRE 09)	ACCREDIA
ELISA Anti IgG of E.g. and E.m. for Humans (CeNRE 08)	ACCREDIA

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

Yes

According to Manual of Diagnostic Tests and Vaccines for Terrestrial Animals, thirteenth edition 2024, Chapter 1.1.4: "Biosafety and biosecurity: Standard for managing biological risk in the veterinary laboratory and animal facilities (version adopted in May 2015)"

## TOR9: SCIENTIFIC MEETINGS

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

No

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

Yes

Title of event	Date	location	Role (speaker, presenting poster, short communications)	Title of the work presented
19th Workshop of the National Reference Laboratories for Parasites	2024-11-05	Roma, Italy	speaker,	Achievements, outcomes and perspectives of the NRL for Echinococcosis after fruitful years of cooperation with hyperendemic countries
19th Workshop of the National Reference	2024-11-05	Roma, Italy	presenting poster	Immunohistochemistry as a reliable tool for the diagnosis of Cystic Echinococcosis in

### Giovanna Masala - - ITALY

Laboratories for Parasites				patients from Sardinia, Italy- A confirmatory study
XXXIII Congresso Nazionale della Società Italiana di Parassitologia	2024-06-17	Padova, Italy	speaker,	Molecular phylogenetic analysis of Echinococcus granulosus sensu lato infecting sheep in Italy
Trans-Mediterranean Zoonosis prevention surveillance Network.	2024-06-03	Stintino, Italy	speaker,	Updates on Echinococcosis
Simposio SIPAOC: Metacestodosi Zoonosiche dei piccoli ruminanti: controllo e risvolti socioeconomici in un'ottica One Health	2024-09-17	Sassari, Italy	speaker,	Aggiornamenti epidemiologici sull'Echinococcosi Cistica in Italia.

## TOR10: NETWORK WITH WOAHA REFERENCE LABORATORIES

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

Not applicable (only WOAHA Reference Laboratory designated for the disease)

24. Do you network (collaborate or share information) with other WOAHA Reference Laboratories designated for the same pathogen?

Not applicable (only WOAHA Reference Laboratory designated for the disease)

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

Not applicable (Only WOAHA Reference Laboratory designated for the disease)

*During the past 2 years any WOAHA Reference Laboratories for the same pathogen has been designated.*

26. Did your laboratory collaborate with other WOAHA Reference Laboratories for the same disease on scientific research projects for the diagnosis or control of the pathogen of interest?

Not applicable (only WOAHA Reference Laboratory designated for the disease)

## TOR11: OTHER INTERLABORATORY PROFICIENCY TESTING

27. Did your laboratory organise or participate in inter-laboratory proficiency tests with laboratories other than WOAHA 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	WOAHA Member Countries
"Molecular identification of E.g.s.s." PT01 CeNRE	organizer	12	CeNRE 09 - Identification of E.g. s.s. by PCR for gene CAL	ITALY,



## TOR12: EXPERT CONSULTANTS

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

Yes

Kind of consultancy	Location	Subject (facultative)
Comment on SINZOO Echinococcosi	Online	Covepi-Ministero della Salute
Comment on EU One Health Zoonoses Report 2023	Online	Centro di referenza nazionale per l'epidemiologia veterinaria, la programmazione, l'informazione e l'analisi del rischio (COVEPI)
Thesis: Cystic echinococcosis, a neglected parasitic zoonosis: study of the incidence in intermediate hosts in the Macerata area	Online	Camerino University
Thesis: Fattori di rischio per la trasmissione dell'echinococcosi in un territorio popolato dal lupo: studio questionario rivolto ad allevatori di ovini nell'alto maceratese	Online	Camerino University
Thesis: Echinococcosis, a cosmopolitan zoonosis with historical endemism in Sardinia: past, present and future prevention	Online	Ferrara University

29. Additional comments regarding your report:

No