

# WOAH Reference Laboratory Reports Activities 2025

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## LABORATORY INFORMATION

<b>*Name of disease (or topic) for which you are a designated WOAH Reference Laboratory:</b>	Myxomatosis
<b>*Address of laboratory:</b>	Via Antonio Bianchi 7/9, 25124 Brescia (Italy)
<b>*Tel:</b>	+390302290388
<b>*E-mail address:</b>	patrizia.cavadini@izsler.it
<b>Website:</b>	<a href="https://www.izsler.it/chi-siamo/per-chi-e-con-chi-lavoriamo/centri-direferenza/internazionali/oie-reference-laboratory-for-rabbit-haemorrhagic-disease/">https://www.izsler.it/chi-siamo/per-chi-e-con-chi-lavoriamo/centri-direferenza/internazionali/oie-reference-laboratory-for-rabbit-haemorrhagic-disease/</a>
<b>*Name (including Title) of Head of Laboratory (Responsible Official):</b>	Dr. Giorgio Varisco (DVM, General Director of IZSLER)
<b>*Name (including Title and Position) of WOAH Reference Expert:</b>	Dr. Antonio Lavazza (retired). Pending nomination new expert.
<b>*Which of the following defines your laboratory? Check all that apply:</b>	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>			
c-ELISA	Yes	72	224
<b>Direct diagnostic tests</b>			
PCR one step	Yes	26	0
PCR real-time	Yes	1	0
NGS sequencing	No	9	6
EM	Yes	6	0
Histopathology	Yes	0	0
Cell Culture Isolation	Yes	7	0
Immunofluorescence and Immunoperoxidase	Yes	4	0

## TOR2: REFERENCE MATERIAL

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

No

3. Did your laboratory supply standard reference reagents (nonWOAH-approved) and/or other diagnostic reagents to WOAH Members?

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Yes

Type of reagent available	Related diagnostic test	Produced/ provide	Amount supplied nationally (ml, mg)	Amount supplied internationally (ml, mg)	No. of recipient WOAHO Member Countries	Country of recipients
Vaccinal strain (purified)	Elispot	Produced and provided	0	15ML	1	SPAIN,

4. Did your laboratory produce vaccines?

No

5. Did your laboratory supply vaccines to WOAHO Members?

## TOR3: NEW PROCEDURES

6. Did your laboratory develop new diagnostic methods for the designated pathogen or disease?

Yes

Name of the new test or diagnostic method developed	Description and References (Publication, website, etc.)
ELISpot	Experimental trial to validate the use in the field conditions for cellular immunity measurement (13th International Congress for Veterinary Virology - Including an EPIZONE Session (ESVV 2025). Rossini E. et al. Setting up an ELISpot IFN- $\gamma$ Assay to Assess the Cellular Immune Response to MYXV. Grand Hotel Bernardin, Portoroz (Slovenia), 2-5 Settembre 2025, pp. 109)

7. Did your laboratory validate diagnostic methods according to WOAHO 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 WOAHO Standards for the designated pathogen or disease?

## TOR4: DIAGNOSTIC TESTING FACILITIES

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

Yes

Name of WOAHO 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
HUNGARY	2025-07-28	cELISA	176	0
HUNGARY	2025-10-02	cELISA	48	0
THE NETHERLANDS	2025-06-25	NGS	0	6

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

Yes

Name of the WOAHO Member Country receiving a technical consultancy	Purpose	How the advice was provided
CANADA	Request about chemical disinfectants effective for inactivating myxomavirus	Email
SPAIN	Operational guidelines for an experiment involving the infection of rabbits through direct contact	VDC

## TOR5: COLLABORATIVE SCIENTIFIC AND TECHNICAL STUDIES

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

Yes

Title of the study	Duration	Purpose of the study	Partners (Institutions)	WOAHO Member Countries involved other than your country
Scientific Agreement	5	Cellular Immunity study Induced by a live attenuated Vaccine	Laboratorios Hipra	SPAIN

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Against Myxomatosis in Rabbits

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

No

## 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?

Yes

If the answer is yes, please provide details of the data collected:

The outbreaks of myxomatosis worldwide are extremely rare. Indeed, the disease is still observed in those countries where rabbit farming is developed and where rabbits are present as wild animals. More recent data from central Europe (Germany, the Netherlands, Czech Republic, Slovakia, and Hungary) indicate the progressive diffusion of the Toledo strain causing disease in brown hares. Indeed, some cases of myxomatosis in farmed animals evolving into the amyxomatous, respiratory form have been observed in southern European countries.

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:

2

1. Cardoso B, Castro-Scholten S, Cavadini P, Bazzucchi M, Viñuelas JA, Martínez-Haro M, Queirós J, Alves PC, Acevedo P, García-Bocanegra I, Santos N. Estimating the diagnostic performance of serological assays for emerging pathogens using a Bayesian approach: Myxoma virus in the Iberian hare (*Lepus granatensis*). *Prev. Vet. Med.* 2025 Jun;239:106488. doi: 10.1016/j.prevetmed.2025.106488. Epub 2025 Feb 24. PMID: 40020268

2. Bazzucchi M, Rossini E, Cavadini P, Bertasio C, Lavazza A. Genome sequence of the Myxoma virus Borghi vaccine strain. *Vaccine.* 2025 Oct 14;66:127835. doi:10.1016/j.vaccine.2025.127835.

b) International conferences:

1

1. 13th International Congress for Veterinary Virology - Including an EPIZONE Session (ESVV 2025). Rossini Elisa, Blanco Esther, Bazzucchi Moira, Dorigo Francesco, Tolini Clara, Lavazza Antonio, Cavadini Patrizia. Setting up an ELISpot IFN- $\gamma$  Assay to Assess the Cellular Immune Response to MYXV. Grand Hotel Bernardin, Portoroz (Slovenia), 2-5 Settembre 2025, pp. 109.

c) National conferences:

1

Webinar organized by the National Reference Center entitled: "UPDATES ON VIRAL DISEASES OF LAGOMORPHS" 02/12/2025.

Speakers:

Diagnosis of viral diseases in rabbits: state of the art and performance evaluation, including non-conventional matrices (Patrizia Cavadini)

Presence and characterization of RHDVa strains in Italy over the last decade (Vittoria Di Giovanni)

Genomic characterization of myxomatosis viruses, with particular reference to the Borghi vaccine strain and to strains identified in hares (Moira Bazzucchi)

The ELISpot method for the diagnosis of cell-mediated immunity to myxomatosis: state of the art and prospects for use (Elisa Rossini)

Emerging diseases in wild lagomorphs: the case of syphilis (Tiziana Trogu)

Role and vector competence of insects in the transmission of RHDV and myxomatosis (Francesco Defilippo)

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 WOAHP Members?

Yes

a) Technical visit : 1

b) Seminars : 5

c) Hands-on training courses: 0

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
A	CHINA (PEOPLE'S REP. OF)	20
B	CHINA (PEOPLE'S REP. OF)	20

## 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 ENISO/IEC 17025	PDF	CERTIFICATO-DI-ACCREDITAMENTO.pdf

19. Is your quality management system accredited?

Yes

Test for which your laboratory is accredited	Accreditation body
Electron Microscopy negative staining methods	ILAC MRA , ACCREDIA
PCR/RT-PCR	ILAC MRA , ACCREDIA
Serological Competitive MAb ELISA (c-ELISA)	ILAC MRA , ACCREDIA
Histopathology/Immunohistochemistry	ILAC MRA , ACCREDIA

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

Yes

The laboratory works according to the Manual of Diagnostic Tests and Vaccines for Terrestrial Animals, Chapter 1.1.4, and the WHO Laboratory Biosafety Manual. A risk analysis approach was adopted to manage the biological risks of specific agents aimed at biosecurity in veterinary laboratories and animal facilities. As a result of this process, the assignment of Myxoma virus to the risk group (BLS2) relevant to the country was defined, and the consequent steps were taken to work in laboratory facilities defined by containment levels appropriate to the types of risks identified.

## TOR9: SCIENTIFIC MEETINGS

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

No

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

No

## TOR10: NETWORK WITH WOAHP REFERENCE LABORATORIES

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

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

24. Are you a member of a network of WOAHP Reference Laboratories designated for the same pathogen?

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

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

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

Not applicable

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

Not applicable (only WOA 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 WOA Reference Laboratories for the same pathogen during the past 2 years?

No

No

## TOR12: EXPERT CONSULTANTS

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

Yes

Kind of consultancy	Location	Subject (facultative)
Review of WOA Standards	on site	Last review of the chapter of the Manual was completed in 2020 and published in 2021.

29. Additional comments regarding your report:

No

*Myxomatosis is a well-known disease that is still present, often endemic, worldwide. However, its occurrence is very rarely reported because notification is not compulsory in most countries. European laws (reg EU 429/2016) did not declare any rabbit disease notifiable.*

*Therefore, the available epidemiological data are scarce, and the clinical aspects and distribution patterns are almost the same since their original appearance, making the diagnosis often based only on clinical signs. Thus, the request for testing samples and for scientific advice is equally rare.*

*Attention to this disease has been increasing in Europe since 2018 due to the occurrence and progressive spreading in the wild of a mutated strain, which typically affects different species of hares as well as wild rabbits.*