

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:	Rabbit haemorrhagic disease
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Name (including Title) of Head of Laboratory (Responsible Official):	Dr. Piero Frazzi, DVM, General Director
Name (including Title and Position) of OIE Reference Expert:	Dr. Lorenzo Capucci, BSc, Head of Proteomic Laboratory
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		Nationally	Internationally
RHDV Competition ELISA	yes	544	118
RHDV2 Competition ELISA	yes	968	562
EBHSV Competition ELISA	yes	329	24
RHDV IgA Isotype ELISA	yes	1	0
RHDV IgG Isotype ELISA	yes	232	105
RHDV IgM Isotype ELISA	yes	2	30
Direct diagnostic tests		Nationally	Internationally
RHDV Sandwich ELISA	yes	266	4
EBHSV Sandwich ELISA	yes	159	2
RT-PCR RHDV/RHDV2	yes	0	4
RT-PCR EBHSV	yes	2	0
Genome sequencing	no	0	2
RT-PCR lagovirus	yes	18	0

**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
RHDV serological kit	c-ELISA	produced	n.6	n.7	3	<input type="checkbox"/> Africa <input checked="" type="checkbox"/> Americ as <input type="checkbox"/> Asia and Pacific <input checked="" type="checkbox"/> Europe <input type="checkbox"/> Middle East
EBHSV serological kit	c-ELISA	produced	n.4	n.11	2	<input type="checkbox"/> Africa <input type="checkbox"/> Americ as <input type="checkbox"/> Asia and Pacific <input checked="" type="checkbox"/> Europe <input type="checkbox"/> Middle East
RHDV/EBHSV virological kit	MAbs sandwich ELISA	produced	n.12	n.18	3	<input type="checkbox"/> Africa <input checked="" type="checkbox"/> Americ as <input type="checkbox"/> Asia and Pacific <input checked="" type="checkbox"/> Europe <input type="checkbox"/> Middle East
RHDV2 serological kit	c-ELISA	produced	n.4	n.17	4	<input type="checkbox"/> Africa <input checked="" type="checkbox"/> Americ as <input type="checkbox"/> Asia and Pacific <input checked="" type="checkbox"/> Europe <input type="checkbox"/> Middle East
RHDV/RHDV2 Differential kit	MAbs sandwich ELISA	produced	n.0	n.5	3	<input type="checkbox"/> Africa <input type="checkbox"/> Americ as <input type="checkbox"/> Asia and Pacific <input checked="" type="checkbox"/> Europe <input type="checkbox"/> Middle East
Monoclonal antibodies	Immunohisto-chemistry and ELISA	produced	n.0	3 ml	2	<input type="checkbox"/> Africa <input checked="" type="checkbox"/> Americ as <input checked="" type="checkbox"/> Asia and Pacific <input type="checkbox"/> Europe <input type="checkbox"/> Middle East

Proficiency panel for RHDV/RHDVa/RHDV2	RT-PCR and ELISA	provide	n.0	N. 2 panels of 10 vials (15ml) each	1	<input type="checkbox"/> Africa <input checked="" type="checkbox"/> Americ as <input type="checkbox"/> Asia and Pacific <input type="checkbox"/> Europe <input type="checkbox"/> Middle East
Positive controls for RHDVs diagnosis	RT-PCR	provide	n. 0	32 ml (2x1 ml and 2x 15 ml)	1	<input type="checkbox"/> Africa <input checked="" type="checkbox"/> Americ as <input type="checkbox"/> Asia and Pacific <input type="checkbox"/> Europe <input type="checkbox"/> Middle East
Various reagents for RHDV virology and serology (MAbs, hyperimmune sera, conjugates, antigens etc)	ELISAs and RT-PCR	produced	n. 0	various amount and quantities of 12 different reagents	1	<input type="checkbox"/> Africa <input type="checkbox"/> Americ as <input checked="" type="checkbox"/> Asia and Pacific <input type="checkbox"/> Europe <input type="checkbox"/> Middle East

4. Did your laboratory produce vaccines?

Yes

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
FRANCE	february	338	0
FRANCE	march	44	0
FRANCE	may	135	0
SWEDEN	may	0	4
IRELAND	june	1	0
SWEDEN	september	5	0
BELGIUM	october	1	0
IRELAND	october	1	0
SPAIN	december	22	0
BENIN	january	4	0
THE NETHERLANDS	july	39	0
UNITED STATES OF AMERICA	july	30	0
GERMANY	january	207	0
THE NETHERLANDS	november	163	0

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
UNITED STATES OF AMERICA	To give information on the epidemiology and diagnosis of RHD and related lagoviruses	Email
BRAZIL	Testing of pet rabbits for international movement	Email
FRANCE	To give information on the epidemiology and diagnosis of RHDV and related lagoviruses	Email
GERMANY	To give information on the epidemiology and diagnosis of EBHS/RHDV and related lagoviruses	Email
THE NETHERLANDS	To give information on the epidemiology and virological and serological diagnosis of RHDV and related lagoviruses	Email
SENEGAL	To provide the protocol for the RT-PCR diagnosis of RHD	Email
SPAIN	Technical advice and support for the characterization of RHDV strains	Email
NIGERIA	Technical advice and support for the genotyping of RHDV strains and for training	Email
CUBA	Information regarding training period of six months at the OIE RefLab	Email

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
PRIMA - LAGMED "Improvement of preventive actions to emerging LAGoviruses in the MEDiterranean basin: development and optimisation of methodologies for pathogen detection and control"	36 months	i) To monitor RHD epidemiology in the Mediterranean basin and perform a genomic characterization of circulating strains, ii) To test and apply biosecurity measures to prevent outbreaks and better contain the disease in the field and in rabbit-production systems, particularly in countries located south to the Mediterranean basin. iii) To advise and train stakeholders and partners in Africa on disease diagnosis and prophylaxis, and technical management.	1.CIBIO/InBIO-UP Portugal 2.INIA Spain 3.Universidad de Córdoba Spain 4.ANSES France 5.ONCFS France 6.INRA-ENVT France 7.ENMV de Sidi Thabet Tunisia 8.ENSV d'Alger Algeria	PORTUGAL

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:

We analyse the genomic and antigenic characteristics of the different lagovirus strains identified mainly in European countries but also in some other parts of the world. The studies are pointed to achieve data on the presence and distribution of both pathogenic and non pathogenic lagovirus strains infecting rabbits and other lagomorph species even as spillover hosts.

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:

Data gathered and obtained from examination of samples received from member countries, when robust and indicative of new data are organised and elaborated in communications at meetings and conferences and for the preparation of scientific papers. Indeed, the participation in international projects and in established scientific collaborations helps in the acquisition and exchange of data and information.

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: 3

1. STRIVE T, PIPER M, HUANG N, MOURANT R, KOVALISKI J, CAPUCCI L, COX TE, SMITH I. Retrospective serological analysis reveals presence of the emerging lagovirus RHDV2 in Australia in wild rabbits at least five months prior to its first detection. *Transbound Emerg Dis.* 2020 Mar;67(2):822-833. doi: 10.1111/tbed.13403. Epub 2019 Nov 13.
2. CAVADINI P, MOLINARI S, MERZONI F, VISMARRA A, POSAUTZ A, ALZAGA GIL V, CHIARI M, GIANNINI F, CAPUCCI L, LAVAZZA A. Widespread occurrence of the non-pathogenic hare calicivirus (HaCV Lagovirus GII.2) in captive-reared and free-living wild hares in Europe. *Transbound. Emerg. Dis.* 2020 Jun 30. doi:10.1111/tbed.13706. Epub ahead of print. PMID: 32603021.
3. BARATELLI M, MOLIST-BADIOLA J, PUIGREDON-FONTANET A, PASCUAL M, BOIX O, MORA-IGUAL FX, WOODWARD M, LAVAZZA A, CAPUCCI L. Characterization of the Maternally Derived Antibody Immunity against Rhdv-2 after Administration in Breeding Does of an Inactivated Vaccine. *Vaccines (Basel).* 2020 Aug 28;8(3):484. doi:10.3390/vaccines8030484. PMID: 32872139; PMCID: PMC7564433.

b) International conferences: 0

We had planned to participate and present contributions at two international conferences both programmed on July 2020 in France. However due to the COVID emergence both the World Rabbit Scientific Association (WRSA) Congress and the World Lagomorph Society (WLS) Congress were cancelled and re-scheduled respectively on 2021 and 2022.

c) National conferences: 2

1. LAVAZZA ANTONIO, PATRIZIA CAVADINI, LORENZO CAPUCCI (2019) Lagovirus e lagomorfi, un rapporto in continua evoluzione: una sfida per la loro identificazione? Atti del convegno "La fauna selvatica nelle produzioni animali: aspetti gestionali e sanitari". Pisa, 27 Settembre 2019 Università di Pisa - Dipartimento di Scienze Veterinarie, Campano Edizioni, Pisa 9788865284858 pp 5-16.
2. LAVAZZA ANTONIO Insegnamenti dalla gestione della lepre nel nord Italia
CAPUCCI LORENZO Progetto Europeo: controllo dei Lagovirus nel bacino del Mediterraneo. Workshop "I Lagomorfi in Sardegna Stato di conservazione, prospettive di gestione, aspetti giuridici e giurisprudenza in materia di autorizzazione al prelievo venatorio" Organized by ASSOCIAZIONE CPT - CACCIA PESCA E TRADIZIONI SARDEGNA Sardara 25/07/2020.

d) Other:

(Provide website address or link to appropriate information) 1

CAPUCCI LORENZO, PATRIZIA CAVADINI, ANTONIO LAVAZZA. Rabbit Hemorrhagic Disease Virus and European Brown Hare Syndrome Virus, Reference Module in Life Sciences, Elsevier, 2019, ISBN 9780128096338, <https://doi.org/10.1016/B978-0-12-809633-8.20998-9>.

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?

No

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)
UNI CEI ENISO/IEC 17025	CERTIFICATO-DI-ACCREDITAMENTO.pdf

16. Is your quality management system accredited?

Yes

Test for which your laboratory is accredited	Accreditation body
RT_PCR	ILAC MRA, ACCREDIA
Serological Competitive RHDV-ELISA	ILAC MRA, ACCREDIA
Serological Competitive RHDV2-ELISA	ILAC MRA, ACCREDIA
Virological sandwich MAbs RHDV/EBHSV-ELISA	ILAC MRA, ACCREDIA
Immunohistochemistry	ILAC MRA, ACCREDIA
Electron Microscopy negative staining methods	ILAC MRA, 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?

Yes

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

Purpose for inter-laboratory test comparisons ¹	No. participating laboratories	Region(s) of participating OIE Member Countries
Proficiency panel for RHDV/RHDVa/RHDV2 virologic diagnosis. This panel will be used for inter-laboratory test comparisons within the USA.	1	<input type="checkbox"/> Africa <input checked="" type="checkbox"/> Americas <input type="checkbox"/> Asia and Pacific <input type="checkbox"/> Europe <input type="checkbox"/> Middle East

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)
Review of OIE Standards	-	During 2019 we have revised and updated the chapter on rabbit haemorrhagic disease for the ninth edition of the OIE Manual of Diagnostic Tests and Vaccines for Terrestrial Animals. Its approval was scheduled for the 88° OIE General Session scheduled on may 2020 that have been cancelled.

25. Additional comments regarding your report:

During 2020 the laboratory has further extended nationally and internationally the application of specific serological and virological test (MAbsELISA for antigen detection, cELISA and isotype_ELISAs for serology and RT-PCR) towards the RHDV2. In particular, we have to report the large epidemic diffusion of such virus in wild and domestic lagomorphs in USA and Mexico. Even more information on pathogenic and non-pathogenic lagoviruses' spread, host susceptibility, and antigenic and genomic characteristics were acquired thanks to the scientific collaboration and research projects with colleagues from various member Countries. A technical support based mainly on diagnostic activity and providing of reagents and materials was given to different OIE member countries.