WOAH Reference Laboratory Reports Activities 2023
Activities in 2023
This report has been submitted: 14 juin 2024 16:12

Laboratory Information

Name of disease (or topic) for which you are a designated WOAH Reference Laboratory: Newcastle disease

Address of laboratory: WOAH Reference Laboratory for Newcastle disease, Istituto Zooprofilattico Sperimentale delle Venezie (IZSVe) Viale dell’Università 10 – 35020 Legnaro (PD) - Italy

Tel: +39-049 808 4381

E-mail address: imonne@izsvenezie.it

Website: www.izsvenezie.it

Name (including Title) of Head of Laboratory (Responsible Official): Calogero Terregino, Director of the Research and Development Department, Director of the Specialized Virology and Experimental Research, Acting Director of the Virology Department (IZSVe)

Name (including Title and Position) of WOAH Reference Expert: Isabella Monne, DVM PhD Head of the Viral genomics and transcriptomics Laboratory, Division of Research and Innovation

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

<table>
<thead>
<tr>
<th>Diagnostic Test</th>
<th>Indicated in WOAH Manual (Yes/No)</th>
<th>Total number of test performed last year</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Nationally</td>
<td>Internationally</td>
</tr>
<tr>
<td>Indirect diagnostic tests</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Haemoagglutination inhibition (HI)</td>
<td>Yes</td>
<td>425</td>
</tr>
<tr>
<td>ELISA</td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>Direct diagnostic tests</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Isolation</td>
<td></td>
<td>5</td>
</tr>
<tr>
<td>RRT/RT-PCR</td>
<td></td>
<td>506</td>
</tr>
<tr>
<td>Sequencing (cleavage site)</td>
<td></td>
<td>131</td>
</tr>
<tr>
<td>ICPI - Intracerebral Pathogenicity Index</td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>WGS - Whole Genome Sequencing</td>
<td></td>
<td>0</td>
</tr>
</tbody>
</table>

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?

   Yes

<table>
<thead>
<tr>
<th>TYPE OF REAGENT</th>
<th>RELATED DIAGNOSTIC</th>
<th>PRODUCED/ PROVIDE</th>
<th>AMOUNT SUPPLIED</th>
<th>AMOUNT SUPPLIED INTERNATIONALLY</th>
<th>NO. OF RECIPIENT WOAH MEMBER</th>
<th>COUNTRY OF</th>
</tr>
</thead>
</table>

WOAH Reference Laboratory Reports Activities 2023
### Control positive antigens

**Test:** HI serological test  
**Result:** 972/185 ml, 38 ml, 147 ml  
**Countries:** 16  
**Recipients:** Algeria, Austria, Cyprus, Finland, Greece, Italy, Jordan, Kosovo, North Macedonia (Rep. Of), Poland, Portugal, Romania, Serbia, Spain, Sweden, Turkey.

### Control positive sera

**Test:** HI/AGID serological test  
**Result:** 500/204 ml, 96 ml, 108 ml  
**Countries:** 17  
**Recipients:** Algeria, Austria, Cyprus, Ecuador, Finland, Greece, Italy, Jordan, Kosovo, Portugal, Romania, Serbia, Spain, Sweden, Thailand, Turkey, Ukraine.

### Control negative serum

**Test:** HI serological test  
**Result:** 2060/322 ml, 33 ml, 289 ml  
**Countries:** 14  
**Recipients:** Algeria, Finland, Greece, Italy, Jordan, Kosovo, Moldova, Poland, Portugal, Romania, Sierra Leone, Spain, United Kingdom, Zimbabwe.

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4. Did your laboratory produce vaccines?  
No  
5. Did your laboratory supply vaccines to WOAH 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 WOAH Standards for the designated pathogen or disease?  
Yes

<table>
<thead>
<tr>
<th>NAME OF THE NEW TEST OR DIAGNOSTIC METHOD DEVELOPED</th>
<th>DESCRIPTION AND REFERENCES (PUBLICATION, WEBSITE, ETC.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Molecular pathotyping of APMV-1 by real-time RT-PCR</td>
<td>(Fortin et al., 2023) <a href="https://www.sciencedirect.com/science/article/pii/S0166093423001386?via%3Dihub">https://www.sciencedirect.com/science/article/pii/S0166093423001386?via%3Dihub</a></td>
</tr>
</tbody>
</table>

8. Did your laboratory develop new vaccines for the designated pathogen or disease?  
No  
9. Did your laboratory validate vaccines according to WOAH Standards for the designated pathogen or disease?  
No  

**TOR4: DIAGNOSTIC TESTING FACILITIES**

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

<table>
<thead>
<tr>
<th>NAME OF WOAH MEMBER COUNTRY SEEKING ASSISTANCE</th>
<th>DATE</th>
<th>WHICH DIAGNOSTIC TEST USED</th>
<th>NO. SAMPLES RECEIVED FOR PROVISION OF DIAGNOSTIC SUPPORT</th>
<th>NO. SAMPLES RECEIVED FOR PROVISION OF CONFIRMATORY DIAGNOSES</th>
</tr>
</thead>
<tbody>
<tr>
<td>CYPRUS</td>
<td>2023-11-17</td>
<td>Real Time PCR RT PCR Sequencing</td>
<td>0</td>
<td>9</td>
</tr>
</tbody>
</table>
### 11. Did your laboratory provide expert advice in technical consultancies on the request of an WOAH Member?

<table>
<thead>
<tr>
<th>NAME OF THE WOAH MEMBER COUNTRY RECEIVING A TECHNICAL CONSULTANCY</th>
<th>PURPOSE</th>
<th>HOW THE ADVICE WAS PROVIDED</th>
</tr>
</thead>
<tbody>
<tr>
<td>ESTONIA</td>
<td>Provided indications to distinguish orthoavulavirus-1 strains (October 2023)</td>
<td>Remote assistance (email)</td>
</tr>
<tr>
<td>VIETNAM</td>
<td>Provided suggestions to set up a Real Time RT PCR process to detect Newcastle virus; <a href="https://www.izsvenezie.com/reference-laboratories/avian-influenza-newcastle-disease/diagnostic-protocols/">https://www.izsvenezie.com/reference-laboratories/avian-influenza-newcastle-disease/diagnostic-protocols/</a>; Provided advice on the diagnostic procedure to confirm the presence of the virus; reference to the current regulation and to a paper DOI: 10.1016/j.jviromet.2023.114813 (December 2023)</td>
<td>Remote assistance (email)</td>
</tr>
<tr>
<td>FINLAND</td>
<td>Provided information on serological methods to detect APMV-1 antibodies (December 2023)</td>
<td>Remote assistance (email)</td>
</tr>
</tbody>
</table>

### TOR5: COLLABORATIVE SCIENTIFIC AND TECHNICAL STUDIES

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

<table>
<thead>
<tr>
<th>Title of the study</th>
<th>Duration</th>
<th>PURPOSE OF THE STUDY</th>
<th>PARTNERS (INSTITUTIONS)</th>
<th>WOAH MEMBER COUNTRIES INVOLVED OTHER THAN YOUR COUNTRY</th>
</tr>
</thead>
<tbody>
<tr>
<td>Memorandum of Understanding</td>
<td>2022-2027</td>
<td>Collaborative studies and implementation of projects on animal health, zoonotic diseases and food safety.</td>
<td>The National Research Center for Tropical and Transboundary Diseases - Libya</td>
<td>LIBYA</td>
</tr>
<tr>
<td>H2020 PROJECT European Virus Archive - EVAg. Grant Agreement number 871029 - EVA-GLOBAL</td>
<td>2020-2023</td>
<td>A non-profit global network sharing expertise in virology and aimed to preserve, produce and distribute viruses and derived products.</td>
<td>CIRAD (France); ANSES, CIARD and the Institute Pasteur (France); the Friedrich-Loeffler-Institute (Germany); Erasmus MC (The Netherlands).</td>
<td>AUSTRALIA FRANCE GERMANY THE NETHERLANDS</td>
</tr>
<tr>
<td>LIDISKI Project: Improving the livelihoods of smallholder livestock farmers in Nigeria</td>
<td>2020-2024</td>
<td>Improving surveillance and control of Peste des petits ruminants (PPR) and Newcastle Disease (ND), the two main diseases affecting the livestock of smallholder farmers in North of Nigeria.</td>
<td>Centre de coopération Internationale en Recherche Agronomique pour le Développement – CIARD (France), Istituto Zooprofilattico Sperimentale delle Venezie (IZSVe) (Italy), Ikore (Nigeria) National Veterinary Institute (Nigeria), National Agricultural Extension and Research Liaison Services - NAERLS (Nigeria), The Federal Ministry of Agriculture and Rural Development – FMARD (Nigeria), International</td>
<td>FRANCE ITALY KENYA NIGERIA</td>
</tr>
</tbody>
</table>
Research: A novel array of real-time RT-PCR assays for the rapid pathotyping of type I avian paramyxovirus (APMV-1) [1].

Research: To develop and validate a reliable and widely inclusive array of RT-qPCRs for the determination of APMV-1 pathotype in clinical samples.

In exercising your activities, have you identified any regulatory research needs* relevant for WOAH?

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:**

1. Collection and analysis of the information generated by surveillance in domestic and wild birds in Italy
2. Collection and analysis of the information generated by surveillance in rural poultry in Nigeria
3. Collection and analysis of the information generated by genetic surveillance in poultry in EU

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:**


Reporting results of molecular, epidemiological and diagnostic analyses to EU NRLs by email and/or through Mattermost, a flexible, open source platform that enables secure team collaboration and enhances an active collaboration between veterinary/public health laboratories and scientists from the EU. This allows rapid dissemination of Newcastle disease updates when possible. Information are also shared through the IZSVe website:


Sample diagnostic and epidemiologic metadata accompanied by virus genetic data from Western African 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:


b) International conferences:

c) National conferences:

0
//

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

12
EURL team at IZSVe (n° 4 presentations on Newcastle disease)
Presentations from the 29th Annual Meeting of the National Reference Laboratories for Avian Influenza and Newcastle Disease of European Union Member States (October 2023)

Training courses organised by IZSVe (2 presentations on Newcastle disease)
1. Updates on avian influenza addressed to the diagnostic laboratories of the national surveillance network (15/12/2023)

Links from IZSVe’s website (n°5):
WOAH & FAO activities

Avian influenza and Newcastle disease in Europe update
https://food.ec.europa.eu/animals/animal-diseases/diseases-and-control-measures/avian-influenza_it#emergency_and_control_measures

European Union Reference Laboratory (EURL) for Avian Influenza and Newcastle Disease

Diagnostic protocols

EVA-GLOBAL Biobank
https://www.european-virus-archive.com/

Other links (1)
Lidiski project - Improving the livelihoods of smallholder livestock farmers in Nigeria
http://www.lidiski.org/
https://www.youtube.com/watch?v=Gp1aa03u4nY&feature=emb_logo

In addition, content about the activities of the project has been shared through social media:
Twitter
https://twitter.com/LIDISKI17?ref_src=twsrc%5Etfw
Instagram
https://instagram.com/lidiski_project?igshid=YmMyMTA2M2Y=
Facebook
https://m.facebook.com/109473960659018/
Youtube
https://youtube.com/@lidiskicomunications3078

**TOR7: SCIENTIFIC AND TECHNICAL TRAINING**

17. Did your laboratory provide scientific and technical training to laboratory personnel from other WOAH Members?
Yes
a) Technical visit : 0
b) Seminars : 0
c) Hands-on training courses: 1
d) Internships (>1 month) 0

<table>
<thead>
<tr>
<th>Type of technical training provided (a, b, c or d)</th>
<th>Country of origin of the expert(s) provided with training</th>
<th>No. participants from the corresponding country</th>
</tr>
</thead>
<tbody>
<tr>
<td>C</td>
<td>ITALY</td>
<td>1</td>
</tr>
</tbody>
</table>

**TOR8: QUALITY ASSURANCE**

18. Does your laboratory have a Quality Management System?  
Yes

<table>
<thead>
<tr>
<th>Quality management system adopted</th>
<th>Certificate scan (PDF, JPG, PNG format)</th>
</tr>
</thead>
<tbody>
<tr>
<td>UNI CEI EN ISO/IEC 17025:2018</td>
<td>pdf</td>
</tr>
<tr>
<td>UNI CEI EN ISO/IEC 17043:2010</td>
<td>pdf</td>
</tr>
</tbody>
</table>

19. Is your quality management system accredited?  
Yes

<table>
<thead>
<tr>
<th>Test for which your laboratory is accredited</th>
<th>Accreditation body</th>
</tr>
</thead>
<tbody>
<tr>
<td>Detection of antibodies to Newcastle disease virus (NDV) by haemagglutination inhibition test</td>
<td>ACCREDIA – Italian Accreditation System</td>
</tr>
<tr>
<td>Isolation and characterization of Newcastle disease viruses using SPF embryonated chicken eggs and haemagglutination inhibition test</td>
<td>ACCREDIA – Italian Accreditation System</td>
</tr>
<tr>
<td>APMV-1 virus (Avian Paramyxovirus Type 1) sequence analysis</td>
<td>ACCREDIA – Italian Accreditation System</td>
</tr>
<tr>
<td>Detection of APMV-1 virus (Avian Paramyxovirus Type 1) by RT-PCR</td>
<td>ACCREDIA – Italian Accreditation System</td>
</tr>
<tr>
<td>Detection of APMV-1 virus (Avian Paramyxovirus Type 1) by real time RT-PCR</td>
<td>ACCREDIA – Italian Accreditation System</td>
</tr>
<tr>
<td>Proficiency testing provider</td>
<td>ACCREDIA – Italian Accreditation System</td>
</tr>
</tbody>
</table>

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

The RL implements biorisk management actions to prevent diseases among personnel and to protect the community from harm caused by potentially infectious pathogens. Particular attention is also paid to the safe transport management of infectious substances according to IATA guidelines and UN classification system. Agents (pathogenic or infectious organisms, including Newcastle disease viruses) posing moderate hazards to personnel and the environment are handled under BSL-2 conditions. At IZSVe, since 2013, there exists a Biosafety Committee (of which the Head of the RL is a permanent member) responsible for the following tasks: - Evaluation of the safety risks for workers and for the environment connected to the activities to be performed under BSL3 conditions that involves the use of microorganisms, animals and Genetically Modified Microorganisms MOGM; - Evaluation of the emergency procedures - Evaluation of all the management and operative procedures to be applied inside the BSL-3 laboratory and animal facilities including potential biosecurity issues. All Standard Operative Procedures (SOPs) and handling of pathogens are written and performed accordingly to the WHO Laboratory Biosafety Manual (4th Ed.). The BSL-3 laboratory and animal facilities are maintained regularly to ensure biocontainment during an annual suspension of activities for plant and equipment maintenance following decontamination of the premises. All the BSL-3 facilities are equipped with self-closing set of locking doors with access away from general building corridors and access is restricted and controlled at all times as part of the internal biosecurity measures.

**TOR9: SCIENTIFIC MEETINGS**

21. Did your laboratory organise scientific meetings related to the pathogen in question on behalf of WOAH?  
No

22. Did your laboratory participate in scientific meetings related to the pathogen in question on behalf of WOAH?  
No

**TOR10: NETWORK WITH WOAH REFERENCE LABORATORIES**

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

24. Do you network (collaborate or share information) with other WOAH Reference Laboratories designated for the same pathogen?  
Yes
Collaboration on animal health, with specific focus on Newcastle disease

<table>
<thead>
<tr>
<th>NETWORK/DISEASE</th>
<th>(PARTICIPANT, ORGANISER, ETC)</th>
<th>NO. PARTICIPANTS</th>
<th>PARTICIPATING WOAH REF. LABS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Regular exchange of results of molecular, epidemiological and diagnostic analyses by email and/or through Mattermost, the open source platform that enables active collaboration with the other European Laboratories</td>
<td>2</td>
<td>Friedrich Loeffler Institute, Federal Research Institute for Animal Health (Germany); Animal and Plant Health Agency Weybridge (UK)</td>
<td></td>
</tr>
</tbody>
</table>

25. Did you organise or participate in inter-laboratory proficiency tests with WOAH Reference Laboratories designated for the same pathogen?

Yes

<table>
<thead>
<tr>
<th>PURPOSE OF THE PROFICIENCY TESTS</th>
<th>ROLE OF YOUR REFERENCE LABORATORY (ORGANISER/ PARTICIPANT)</th>
<th>NO. PARTICIPANTS</th>
<th>PARTICIPATING WOAH REF. LABS/ ORGANISING WOAH REF. LAB</th>
</tr>
</thead>
<tbody>
<tr>
<td>European Proficiency Test on Avian influenza and Newcastle disease</td>
<td>Organiser</td>
<td>Forty-one (41) laboratories : twenty-six (26) EU National reference Laboratories (NRLs) and twelve (15) Non-EU NRLs (including four (4) from EFTA countries)</td>
<td>• Friedrich Loeffler Institute, Federal Research Institute for Animal Health Institute of Diagnostic Virology (Germany); Animal and Plant Health Agency Weybridge (UK) (detailed Information and Final coded report available at the IZSVe)</td>
</tr>
<tr>
<td>APHA Proficiency Test on Newcastle disease</td>
<td>Participant Organiser: The Animal and Plant Health Agency (APHA) Surrey, UK; Molecular, Serological and Virological tests</td>
<td>Information available from the organiser</td>
<td></td>
</tr>
</tbody>
</table>

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

Yes

<table>
<thead>
<tr>
<th>TITLE OF THE PROJECT OR CONTRACT</th>
<th>SCOPE</th>
<th>NAME(S) OF RELEVANT WOAH REFERENCE LABORATORIES</th>
</tr>
</thead>
<tbody>
<tr>
<td>Research: A novel array of real-time RT-PCR assays for the rapid pathotyping of type I avian paramyxovirus (APMV-1) <a href="https://pubmed.ncbi.nlm.nih.gov/37722509/">https://pubmed.ncbi.nlm.nih.gov/37722509/</a></td>
<td>To develop and validate a reliable and widely inclusive array of RT-qPCRs for the determination of APMV-1 pathotype in clinical samples. The rapid discrimination of virulent and avirulent viruses is paramount to limit the spread of virulent APMV-1.</td>
<td>Institute of Diagnostic Virology, Federal Research Institute for Animal Health, Friedrich-Loeffler-Institut (FLI), Riems, Germany</td>
</tr>
</tbody>
</table>

**TOR11: OTHER INTERLABORATORY PROFICIENCY TESTING**

27. Did your laboratory organise or participate in inter-laboratory proficiency tests with laboratories other than WOAH Reference Laboratories for the same pathogen?

Yes

<table>
<thead>
<tr>
<th>Purpose for inter-laboratory test comparisons</th>
<th>Role of your reference laboratory (organizer/participant)</th>
<th>No. participating laboratories</th>
<th>Name of the Test</th>
<th>WOAH Member Countries</th>
</tr>
</thead>
<tbody>
<tr>
<td>National Proficiency Test for Avian Influenza and Newcastle Disease</td>
<td>Organiser</td>
<td>20</td>
<td>Molecular, Serological and Virological test (AQUA IN 2023)</td>
<td>ITALY,</td>
</tr>
</tbody>
</table>

**TOR12: EXPERT CONSULTANTS**

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

No

29. Additional comments regarding your report:

Yes

TOR 7, query 17, the RL provided further training to:

- b seminar: 80 participants from European and extra European countries at the 29th Annual Meeting of the National Reference Laboratories for Avian Influenza and Newcastle Disease of European Union Member States (02-02/10/2023 – Parma, Italy)