

OIE Reference Laboratory Reports Activities

Activities in 2020

This report has been submitted : 2021-01-19 16:39:32

Name of disease (or topic) for which you are a designated OIE Reference Laboratory:	Newcastle disease
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Name (including Title) of Head of Laboratory (Responsible Official):	Dr. Christian Grund
Name (including Title and Position) of OIE Reference Expert:	Dr. Christian Grund; head of OIE, FAO and national reference laboratory for Newcastle disease
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			
Hemagglutination inhibition test (HI)	yes	541	0
Direct diagnostic tests			
virus isolation	yes	56	3
RT-qPCR (M-, NP-, F-gene)	no	1158	48
RT-PCR (F-gene)	yes	94	6
Nucleotide sequencing	yes	94	6
intracerebral pathogenicity index (ICPI)	yes	2	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
genotype-specific reference sera	HI	produced	0	100x1ml	1	<input checked="" type="checkbox"/> Africa <input type="checkbox"/> Americas <input type="checkbox"/> Asia and Pacific <input type="checkbox"/> Europe <input type="checkbox"/> Middle East
Virusstocks	RT-QPCR	produced	3 x 1 ml		0	<input type="checkbox"/> Africa <input type="checkbox"/> Americas <input type="checkbox"/> Asia and Pacific <input type="checkbox"/> Europe <input type="checkbox"/> Middle East

4. Did your laboratory produce vaccines?

No

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
BANGLADESH	March	0	3

9. Did your laboratory provide expert advice in technical consultancies on the request of an OIE Member Country?

No

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?

No

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:

Phylogenetic relation of Newcastle disease virus (NDV) from outbreaks in one governorate in Egypt and characterization of antigenic properties detected NDV. Characterization of infectious bronchitis virus from suspected Newcastle outbreaks.

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:

In an initial study we screened poultry holdings in Egypt that were vaccinated against Newcastle disease but suffered from respiratory distress and elevated mortality. Virulent NDV was detected only in small-scale flocks of sector 3 with limited biosecurity measures (Moharam et al.2019). Recovered NDV were antigenically closely related viruses, indicating that vaccination failure rather than vaccine mismatch accounted for the ND-outbreaks (Moharam et al., 2020, Naguib et al., 2020). In contrast, characterization of an infectious bronchitis virus (IBV) recovered as co-infecting agent from a small-scale flock, revealed mutation in neutralization sensitive sites that dominated recent IB-cases in Egypt (Moharam et al., 2020). For both infections, it is evident, that vaccination alone was not successful in eliminating disease.

**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: 5

Moharam I, Razik AAE, Sultan H, Ghezlan M, Meseko C, Franzke K, Harder T, Beer M, Grund C. Investigation of suspected Newcastle disease (ND) outbreaks in Egypt uncovers a high virus velogenic ND virus burden in small-scale holdings and the presence of multiple pathogens. Avian Pathol. 2019 Oct;48(5):406-415. doi: 10.1080/03079457.2019.1612852. Epub 2019 Jul 25. PMID: 31090444.

Moharam, Ibrahim & Asala, Olayinka & Reiche, Sven & Harder, Timm & Hafez, Hafez & Beer, Martin & Grund, Christian. (2020a). Monoclonal Antibodies Specific for the Hemagglutinin-Neuraminidase Protein Define Neutralizing Epitopes Specific for Newcastle Disease Virus Genotype 2.VII from Egypt.. 10.21203/rs.3.rs-88557/v1. Naguib, Mahmoud & Höper, Dirk & El-Kady, Magdy & Afify, Manal & Erfan, Ahmed & Abozeid, Hassanein & Hassan, Wafaa & Arafa, Abdel-Satar & shahein, Momtaz & Beer, Martin & Harder, Timm & Grund, Christian. (2020). Genomic and antigenic properties of Newcastle Disease virus genotypes 2.XX1 and 2.VII from Egypt do not point to antigenic drift as a driving force of spread. 10.22541/au.160637962.28915681/v1.

Moharam I, Sultan H, Hassan K, Ibrahim M, Shany S, Shehata AA, Abo-ElKhair M, Pfaff F, Höper D, El Kady M, Beer M, Harder T, Hafez H, Grund C. (2020b) Emerging infectious bronchitis virus (IBV) in Egypt: Evidence for an evolutionary advantage of a new S1 variant with a unique gene 3ab constellation. Infect Genet Evol. 2020 Nov;85:104433. doi: 10.1016/j.meegid.2020.104433. Epub 2020 Jul 1. PMID: 32622080; PMCID: PMC7327463.

Hüppi L, Ruggli N, Python S, Hoop R, Albini S, Grund C, Vögtlin A. Experimental pigeon paramyxovirus-1 infection in chicken: evaluation of infectivity, clinical and pathological manifestations and diagnostic methods. J Gen Virol. 2020 Feb;101(2):156-167. doi: 10.1099/jgv.0.001364. Epub 2020 Jan 10. PMID: 31922948.

b) International conferences: 1

Olayinka Asala, Ibrahim Moharam, Jacob Schön and Christian Grund. Protection of layers against NDV challenge with the exotic genotype 2.XIV. 26th Annual Meeting of the EU NRLs for AI/ND. 23.-24. September 2020. Online meeting

c) National conferences: 2

Asala, O., Moharam, I., Hafez, M., Grund, C. (2020) Newcastle Krankheit - Untersuchungen zur Schutzimpfung gegen den „exotische“ Genotypen XIV bei Legehennen. 99. DVG and WVPA joint meeting “Fachgespräch über Geflügelkrankheiten“. 13.-14. November 2020. Online meeting.

Moharam, I., Hafez, M., Grund, C. (2020) New emerging variants of infectious bronchitis virus in Egypt carry a divergent regulatory gene 3ab99. DVG and WVPA joint meeting “Fachgespräch über Geflügelkrankheiten“. 13.-14. November 2020. Online meeting.

d) Other:

(Provide website address or link to appropriate information) 1

Christian Grund and Andrea Delvecchio. (2020) Newcastle disease: epidemiology, pathogenicity and control strategy. Boehringer Ingelheim avian webinar. 15. May 2020. Online seminar.

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?

Yes

a) Technical visits: 0

b) Seminars: 0

c) Hands-on training courses: 0

d) Internships (>1 month): 1

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
d	Egypt	1

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)
ISO 17025:2005	Akkreditierungsurkunde_FLI-Riems-Jena_2019.pdf

16. Is your quality management system accredited?

Yes

Test for which your laboratory is accredited	Accreditation body
Hemagglutination inhibition assay	DAKKS
amplification assays	DAKKS
bio assays	DAKKS

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?

Yes

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?

Yes

Purpose of the proficiency tests: ¹	Role of your Reference Laboratory (organiser/ participant)	No. participants	Participating OIE Ref. Labs/ organising OIE Ref. Lab.
Validation of detection of NDV by molecular means	participant	32	IZS Padua, Italy
Validation of molecular pathotyping of NDV	participant	32	IZS Padua, Italy

¹ validation of a diagnostic protocol: specify the test; quality control of vaccines: specify the vaccine type, etc.

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?

No

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?

No

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

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)
Revising OIE Terrestrial manual	e-mail exchange	OIE Terrestrial Manual: chapter on Newcastle disease (infection with Newcastle disease virus)

25. Additional comments regarding your report: