OIE Reference Laboratory Reports Activities

Activities in 2019

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Name of disease (or topic) for which you are a designated OIE Reference Laboratory:	Infectious haematopoietic necrosis
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Name (including Title) of Head of Laboratory (Responsible Official):	Hong Liu, Senior Research
Name (including Title and Position) of OIE Reference Expert:	Hong Liu, Lab Director
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	
Indirect diagnostic tests		Nationally	Internationally
PCR	Yes	1720	1051
Virus isolation	Yes	483	136
Transmission EM	Yes	7	0
Sequencing	Yes	15	8
Direct diagnostic tests		Nationally	Internationally

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?

No

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?

Yes

7. Did your laboratory develop new vaccines according to OIE Standards for the designated pathogen or disease?

Yes

Name of the new test or diagnostic method or vaccine developed	Description and References (Publication, website, etc.)
General Multiplex RT-PCR and liquiChip High-Throughput for Simultaneous Detection of Six Common Carp viruses	Infectious haematopoietic necrosis virus (IHNV), infectious pancreatic necrosis virus (IPNV), infectious salmon anaemia virus (ISAV), salmonid alphavirus (SAV), viral haemorrhagic septicaemia virus (VHSV), and spring viraemia of carp virus (SVCV) are the main viral pathogens that have caused major harm to the salmon trout farming industry during its rapid development in recent decades. To protect their own aquaculture industry in international trade, various countries strictly quarantine and prevent the introduction of these viruses. In this study, a high-throughput and synchronous method for detection of these six viruses using multiplex RT-PCR combined with a Luminex assay was established. In this method, RT-PCR amplification products were further tested using a LiquiChip probe, which resulted in a rapid, high-throughput subtyping test for six viruses, designated as GMPLex. The GMPLex was highly specific for the different viruses owing to the use of two nested degenerate primers and one probe. No cross-reaction occurred between the viruses, nor did any non-specific reactions with other pathogens. The sensitivity of the GMPLex was evaluated using RNA extracted from IPNV, IHNV, SVCV, VHSV, ISAV, and SAV that was serially diluted 10-fold; the sensitivity of the system was 0.4, 0.1, 0.14, 1.6, 2, and 0.9 pg µL-1, respectively. This method can be used to rapidly, accurately, sensitively, and simultaneously detect six viruses.
The recombinase-aid amplification assay for detecting carp edema virus	To establish a rapid and simple method for the detection of carp edema virus (CEV), a Real-time recombinase-aid amplification (RAA) assay was developed with the primers and probe designed according to the conserved sequence of CEV P4a gene. Through screening the primers and optimizing experimental conditions, the assay can be completed within 20 min at 39℃. The assay was specific to amplify the target sequence of CEV with a detection limit up to 2.8×101 copies per reaction. The co-efficient of variations in intra- and inter-assay were both less than 5%. In addition, 35 clinical samples were tested by this method and 7 samples were detected to be positive, which was 100% consistent with the Real-time PCR. The Real-time RAA assay developed in this study was a simple, rapid, sensitive, reliable and affordable method which could potentially be applied for the detection of CEV in the research laboratory and on site diagnosis.
Improvement of nested PCR Methods for Genotype II carp edema virus	The Cefas qPCR and end point PCR has been applied for carp edema virus surveillance in China. However, the false negative results were found in our lab when a part of the samples were detected using Cefas end-point PCR. In this study, we re-designed primers to improve the performance of Cefas end-point PCR. The new end point PCR show a better sensitivity for carp edema virus surveillance in China.

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?

No

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?

Yes

Title of the study	Duration	Purpose of the study	Partners (Institutions)	OIE Member Countries involved other than your country
Comparative Virulence of Spring Viremia of Carp Virus (SVCV) Genotypes in Two Koi Varieties	2 years	to compare the virulence of different genotype Spring Viremia of Carp Virus (SVCV) in Two Koi Varieties	USGS Western Fisheries research center, USA	UNITED STATES OF AMERICA
Phylogenetic Analysis of carp edema virus in China	2 years	to analyze the molecular epidemiological characters of carp edema virus in China	Centre for Envirument & Aquaculture Science	UNITED KINGDOM
Improvement of PCR Method for Genotype II Carp Edema Virus	2 years	The Cefas qPCR and end-point PCR have been applied for carp edema virus surveillance in China. However, the false negative results were found in our lab when a part of the samples were detected using Cefas end point PCR. In this study, we re-designed primers to improve the performance of Cefas end-point PCR. The new end point-PCR shows a better performance for carp edema virus surveillance in China.	Centre for Envirument & Aquaculture Science	UNITED KINGDOM

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:
The aquatic animal diseases epizootiological data were collected from domestic laboratories, OIE WAHIS and pubilications, including IHNV, IPNV, ISAV, SAV, VHSV, PRV, SVCV, CEV, KHV, WSSV, etc.

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:
The fish diseases epizootiological data were collected from domestic laboratories, OIE WAHIS and pubilications, including IHNV, IPNV, ISAV, SAV, VHSV, PRV, SVCV, CEV, KHV, WSSV, etc. The data was analyzed for introducing auatic animal from foreign countries, diseases risk assessment, international koi trade, national auqatic animal disease surveillance report and scientific publications.

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. 2019 Aquatic Animal Health in China;
2. 2019 Analysis of Aquatic Animal Diseases in China
SVCV surveillance in China (2019);
2. Phylogenetic Analysis and Improvement of PCR Method for Genotype II CEV in China;

b) International conferences: 0

c) National conferences: 3
1. Chinese Fish Assosiation conference;
2. The meeting for national aquatic animal disease surveillance.
3. The meeting for carp edema virus prevention and control in China.

d) Other:
(Provide website address or link to appropriate information) 0

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)
ISO/IEC 17025	CNAS-实验室认可证书（中英文）-20190628.pdf
CNAS-CL05:2009	CNAS-生物安全二级实验室（食检中心）20190701.pdf

16. Is your quality management system accredited?

Yes

Test for which your laboratory is accredited	Accreditation body
BSL-2 Laboratory of Food Inspection and Quarantine Technology Center of Shenzhen Customs Distric (Registration No. CNAS BL0035)	China National Accreditation Service for Conformity Assessment

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?

Yes

Title of event	Date (mm/yy)	Location	Role (speaker, presenting poster, short communications)	Title of the work presented
NACA AGM Meeting	11/2019	Thailand	speaker	The recent situation of DIV1.
The meeting of Guangdong aquatic animal disease contorl and eradication	12/2019	Guangzhou, China	speaker	Aquatic animal health control system in China
Austrlian Scientific conference on Aquatic Animal Health & Biosecurity 2019	07/2019	Cains, Australia	speaker	Development and challenge of surveillance and biosecurity system of aquatic animal health in China
The prevention and control system of aquatic animal diseases for rainbow trout industry in Qinghai, China	06/2019	Xining, China	speaker	1. Inspection and quarantine for imported and exported salmon eggs; 2. How to establish a effective disease diagnossis, prevention and control for rainbow trout culture in open systerm water.
4th OIE Global Conference on Aquatic Animals	04/2019	Santiago	short communications	

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.
Fish disease diagnostic proficiency	participant	unknown	VHSV Reference Laboratory, Technical University of Denmark National Institute for Aquatic Resource

[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?

Yes

Title of the project or contract	Scope	Name(s) of relevant OIE Reference Laboratories
validation of CEV real time PCR and end-point PCR	carp edema virus detection	Cefas Weymouth laboratory
validation of TiLV real time PCR	tilapia lake virus detection	Australian Animal Health Laboratory
establish and validation of SVCV real time PCR	real time RT-PCR for spring viremia of carp	Cefas Weymouth laboratory

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
to evaluate the capacity of domestic auqatic animal disease (SVCV, IHNV, VNNV, TiLV) diagnosis in China	45	☐Africa ☐Americas ☒Asia and Pacific ☐Europe ☐Middle East
European fish disease proficiency	unknown	☐Africa ☒Americas ☒Asia and Pacific ☒Europe ☐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)
OIE Commission meetings	Pair, France	review the OIE aquatic animal Manual and Code.
ad hoc Group meetings	Pair, France	Validation of TiLV diagnostic methods
review of OIE Standards	Pair, France	Manual of Diagnostic Tests for Aquatic Animals, Chapter 2.3.9

25. Additional comments regarding your report: