World Organisation for Animal Health

Hong Liu - - CHINA_(PEOPLE'S_REP_OF)

WOAH Reference Laboratory Reports Activities 2025

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LABORATORY INFORMATION

***Name of disease (or topic) for which you are a designated WOAH Reference Laboratory:**	Infectious haematopoietic necrosis
***Address of laboratory:**	1011 of Fuqiang Road, Futianqu, Shenzhen, Guangdong Province, 518045, P. R. China
***Tel:**	+86-755 25 58 84 10
***E-mail address:**	709274714@qq.com
Website:	
***Name (including Title) of Head of Laboratory (Responsible Official):**	Tikang Lu/Director
***Name (including Title and Position) of WOAH Reference Expert:**	Hong Liu/professor
***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

Diagnostic Test	Indicated in WOAH Manual (Yes/No)	Total number of test performed last year	
Indirect diagnostic tests		Nationally	Internationally
Cell culture (EPC, GCO, FHM)	Yes	184	0
Direct diagnostic tests		Nationally	Internationally
Conventional RT-PCR	Yes	213	0
Real-time RT-PCR	Yes	295	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?

Yes

Type of reagent available	Related diagnostic test	Produced/ provide	Amount supplied nationally (ml, mg)	Amount supplied internationally (ml, mg)	No. of recipient WOAH Member Countries	Country of recipients
cell line	virus isolation	EPC	75 mL	0	1	CHINA (PEOPLE'S REP. OF),

4. Did your laboratory produce vaccines?

No

5. Did your laboratory supply vaccines to WOAH Members?

TOR3: NEW PROCEDURES

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

Yes

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

Yes

Name of the new test or diagnostic method developed	Description and References (Publication, website, etc.)
real-time RT-PCR	the report using the validation reprot template is being drafted and will be submitted to the February Commission Meeting
eDNA concentration and validation in the early warinng, biosecurity system in the free hatchery establishment	Results are analyzed and the paper is being drafted
validation on microfluidic test on IHNV and other cold water fish diseaess	National industrial standard has been drfted and is wating for being reviewed before publication
validation on liquid chip test on IHNV	Results are analyzed and the paper is being drafted

8. Did your laboratory develop new vaccines for the designated pathogen or disease?

9. Did your laboratory validate vaccines according to WOAH Standards for the designated pathogen or disease?

TOR5: COLLABORATIVE SCIENTIFIC AND TECHNICAL STUDIES

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

Yes

Title of the study	Duration	Purpose of the study	Partners (Institutions)	WOAH Member Countries involved other than your country
Study on the genome of IHNV isolated in the world	2023~	Study on the molecular biology of IHNV	The western fishery institute, USA Pacific Biological Station – Aquatic Animal Health Laboratory (PBS-AAHL), Canada Heilongjiang Fishery Institute of Chinese Fishery Academy, P. R. China	CANADA CHINA (PEOPLE'S REP. OF) UNITED STATES OF AMERICA
validation on the real-time RT-PCR test of IHNV	2025~2026	recommend comments on the test of real-time RT-PCR in the WOAH manual chapter of IHN	Pacific Biological Station – Aquatic Animal Health Laboratory (PBS-AAHL), Canada Heilongjiang Fishery Institute of Chinese Fishery Academy, P. R. China	CANADA CHINA (PEOPLE'S REP. OF)

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

Yes

Research need : 1

Please type the Research need: eDNA test on IHNV in practical cases, such as the biosecurity system of free compartment or free zone, or imported broodstock or eyed-eggs, or early warning system

Relevance for WOAH Disease Control, Capacity Building, Standard Setting,

Relevance for the Code or Manual Manual,

Field Epidemiology and Surveillance, Diagnostics,

Animal Category Aquatic,

Disease:

Infection with infectious haematopoietic necrosis virus

Kind of disease (Zoonosis, Transboundary diseases) Transboundary diseases,

If any, please specify relevance for Codes or Manual, chapter and title

(e.g. Terrestrial Manual Chapter 2.3.5 - Minimum requirements for aseptic production in vaccine manufacture)

Answer: Aquatic Manual Chapter 2.3.5- Infection with infectious haematopoietic necrosis virus

Notes:

Answer: Several pathogen concentration methods have been compared and two methods were selected . eDNA combined with microfluidic tests have demonstrated very practical in the early-waring and on-site diagnostic in maintaining biosecurity conditions of free status of compartment or zone.

Research need : 2

Please type the Research need: to prepare new cell lines which is susceptible to IHNV

Relevance for WOAH Disease Control, Capacity Building, Standard Setting,

Relevance for the Code or Manual Manual,

Field Epidemiology and Surveillance, Diagnostics,

Animal Category Aquatic,

Disease:

Infection with infectious haematopoietic necrosis virus

Kind of disease (Zoonosis, Transboundary diseases) Transboundary diseases,

If any, please specify relevance for Codes or Manual, chapter and title

(e.g. Terrestrial Manual Chapter 2.3.5 - Minimum requirements for aseptic production in vaccine manufacture)

Answer: Aquatic Manual Chapter 2.3.5- Infection with infectious haematopoietic necrosis virus

Notes:

Answer: The cell lines recommended in the manual have been used for many years and the character of the cell lines in different labs are quite variant which affects the susceptibility of the pathogens. New cell lines will be a very good supplement and will be very helpful in the virus isolation tests .

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:

https://wahis.woah.org/#/home

Belgium 2024~2025 Present in limited zones in domestic aquatic animals
Canada 2024~2025 Suspected in limited zones in both domestic and wild aquatic animals
P.R. China 2024 Suspected and Inf./infest. in limited zones in domestic aquatic animals
Czech Republic 2024 Present and 2025 present in limited zones in domestic aquatic animals
Georgia 2024 Present in limited zones in domestic aquatic animals
Germany 2024 Present in in domestic aquatic animals
Iran 2024 Present in limited zones in domestic aquatic animals
Italy 2024 Present in limited zones in domestic aquatic animals and became absent
Japan 2024~2025 Present in domestic aquatic animals
Netherlands 2024 Present and 2025 suspected in domestic aquatic animals
North Macedonia 2024 Present in limited zones and 2025 Suspected in limited zones in domestic aquatic animals
Poland 2024 Present in domestic aquatic animals
Slovenia 2024~2025 Present in limited zones in domestic aquatic animals
Switzerland 2024~2025 suspected in domestic aquatic animals
United States of America 2024 Present in limited zones in both domestic and wild aquatic animals

Co-infection with infectious haematopoietic necrosis virus (IHNV) and Flavobacterium psychrophilum is increasing in prevalence in salmonid aquaculture, and this is accompanied by increased economic losses (Nishikawa S, Mizuno S. Synergistic effects of infectious haematopoietic necrosis virus and Flavobacterium psychrophilum co-infection on the mortality and pathophysiology of masu salmon parr Oncorhynchus masou. J Fish Biol. 2025 Feb 28. doi: 10.1111/jfb.70009. Epub ahead of print. PMID: 40017429)

Genetic resistance to IHNV is controlled by the oligogenic inheritance of several moderate and many small effect quantitative trait loci (QTL), which suggests that genomic selection may be a more effective strategy for genetic improvement (Palti Y, Vallejo RL, Purcell MK, Gao G, Shewbridge KL, Long RL, Setzke C, Fragomeni BO, Cheng H, Martin KE, Naish KA. Genome-wide association analysis of the resistance to infectious hematopoietic necrosis virus in two rainbow trout aquaculture lines confirms oligogenic architecture with several moderate effect quantitative trait loci. Front Genet. 2024 May 24;15:1394656. doi: 10.3389/fgene.2024.1394656. PMID: 38854430; PMCID: PMC11162110.)

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:

https://wahis.woah.org/#/home

Belgium 2024~2025 Present in limited zones in domestic aquatic animals
Canada 2024~2025 Suspected in limited zones in both domestic and wild aquatic animals
P.R. China 2024 Suspected and Inf./infest. in limited zones in domestic aquatic animals
Czech Republic 2024 Present and 2025 present in limited zones in domestic aquatic animals
Georgia 2024 Present in limited zones in domestic aquatic animals
Germany 2024 Present in in domestic aquatic animals
Iran 2024 Present in limited zones in domestic aquatic animals
Italy 2024 Present in limited zones in domestic aquatic animals and became absent
Japan 2024~2025 Present in domestic aquatic animals
Netherlands 2024 Present and 2025 suspected in domestic aquatic animals
North Macedonia 2024 Present in limited zones and 2025 Suspected in limited zones in domestic aquatic animals
Poland 2024 Present in domestic aquatic animals
Slovenia 2024~2025 Present in limited zones in domestic aquatic animals
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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:

0

b) International conferences:

5
Aquatic animal health standard commission meeting of the World Organization of Animal Health, Feb. 12~19th, 2025 Paris, France
Workshop to identify the highest priority research areas for Finfish Health organized by WOAH and STAR-IDAZ IRC, Feb. 20~22 nd, Paris, France
Aquatic animal health standard commission meeting of the World Organization of Animal Health, Sep. 17~24th, 2025 Paris
Overview of China Customs Laboratories: Construction and development, Beidaihe, Aug. 26~27th, organized by the Asian region group of the World Custom Organization
Proespectus for AOH Knowledge and Good Practices Workshop Nov. 7-9th Guangzhou, P. R. CHina

c) National conferences:

5
1.Workshop on reviewing on the regulations of imported and exported animals and heritage substances, July 9th, 2025
2. Training on improve the biosecurity system in the specific pathogen free farms, Yatai, Apr. 15th, 2025

3. Training on improve the detection ability on important aquatic animal diseases, Nanchang, Sep. 23~25th, 2025
4. Meeting of reviewing the 2025 surveillance plan in imported and exported animal and the products and drafting the 2026 surveillance plan in imported and exported animal and the products, Guangzhou, Nov. 17th~21st, 2025
5. Annual meeting on domestic aquatic animal health prevention and control, Beijing, Nov. 18~19th, 2025

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

1
National industrial standard: SN/T 1474-2025 Quarantine protocal for the infection with infectious haematopoietic necrosis virus

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 : 2

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
B		150
B		50

TOR8: QUALITY ASSURANCE

18. Does your laboratory have a Quality Management System?

Yes

Quality management system adopted	Certificate scan (PDF, JPG, PNG format)	
ISO 17025	PDF	CNAS 17025 certificate.pdf
BSL-2	PDF	BL0035 certificate .pdf
ISO 17025	PDF	CNAS 17025 Scope.pdf

19. Is your quality management system accredited?

Yes

Test for which your laboratory is accredited	Accreditation body
Virus isolation	China National Accreditation Service for Conformity Assessment (CNAS)
Conventional RT-PCR	China National Accreditation Service for Conformity Assessment (CNAS)
real-time RT-PCR	China National Accreditation Service for Conformity Assessment (CNAS)

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

Yes

Have a series of protocols or procedures to maintain the biorisk management system; Apply for the accreditation of Bio-safety 2 and have a annual audit; Have all the necessary facilities or instruments to meet the requirement of Bio-safety 2 accreditation;

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?

Yes

Title of event	Date	location	Role (speaker, presenting poster, short communications)	Title of the work presented

Proespectus for AOH Knowledge and Good Practices Workshop	2025-11-06	Guangzhou	speaker	Establishment of national aquatic pathogen list for inspection and quarantine
Workshop to identify the highest priority research areas for Finfish Health organized by WOAH and STAR-IDAZ IRC, Feb. 20~22 nd, Paris, France	2025-02-19	Paris	Speaker	Diagnositc advances on aquatic diseaes
Veterinary Public Health Workshop 2025	2025-03-02	Hongkong	speaker	Surveillence and standization on import and export edible animals in China

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

Yes

NETWORK/DISEASE	ROLE OF YOUR LABORATORY (PARTICIPANT, ORGANISER, ETC)	NO. PARTICIPANTS	PARTICIPATING WOAH REF. LABS
Infeciton with Infectious haematopoietic necrosis virus	Participant	2	The western fishery institute, USA Pacific Biological Station, Aquatic Animal Health Laboratory (PBS-AAHL), Canada

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

Yes

Purpose of the proficiency test:	Role of your Reference Laboratory (organiser/ participant)	No. participating Laboratories	Participating WOAH Ref. Labs/ organising WOAH Ref Lab
Compare the sensitivity of real-time RT-PCR in different laboratories	organiser	11	0

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

Title of the project or contract	Scope	Name(s) of relevant WOAH Reference Laboratories
Study on the molecular biology of IHNV based on the virus genome sequenced	Molecular epidemiology	The western fishery institute, USA Pacific Biological Station, Aquatic Animal Health Laboratory (PBS-AAHL), Canada

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 during the past 2 years?

Yes

Purpose for inter-laboratory test comparisons1	Role of your reference laboratory (organizer/participant)	No. participating laboratories	Name of the test	WOAH Member Countries
To confirm the ability of the virus isolation and laboratory who will join the active surveillence program	Organizer	50	virus isolation and identification with conventional RT-PCR and real-time RT-PCR	CHINA (PEOPLE'S REP. OF),

TOR12: EXPERT CONSULTANTS

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

No

29. Additional comments regarding your report:

Yes

The infection with IHNV is still prevalent in many countries and a serious threat to cold water fish culturte in many countries. It is not easy to collect the new isolates notified by the Members. It should be couraged to distribute the isolates with reference laboratoris in order to carry out the epidemiological analyze at the global level