

WOAH Reference Laboratories for Infection with Spring Viraemia of Carp Virus (SVC) and Infectious Haematopoietic Necrosis (IHN)

Animal and Plant Inspection and Quarantine Technical Center, Shenzhen Customs District, General Administration of Customs (GACC), P. R. China

Designated Expert: Dr. Hong Liu

1. Overview

Two WOAHO Reference Laboratories hosted by the Center: infection with SVCV and infection with IHN.

Core mandate: diagnostic confirmation, quarantine risk analysis, technical consultation, research and standards support.

Focus on aquatic animal health diagnostics, proficiency testing, training, surveillance and method development.

International cooperation with reference laboratories and partners to harmonise WOAHO-recommended assays.

SVCV Spring viraemia of carp virus

IHN Infectious haematopoietic necrosis virus

2. Expertise, services and facilities



Agency mandate & diagnostic support



Training & communication



Surveillance, PT & RT

- Quarantine identification and diagnostic testing for aquatic animal pathogens.
- Reference testing, surveillance and molecular epidemiology analysis.
- Proficiency testing / reference testing and laboratory capacity building.
- Scientific research, standardisation and method validation for SVC and IHN



ISO 17015 certificate



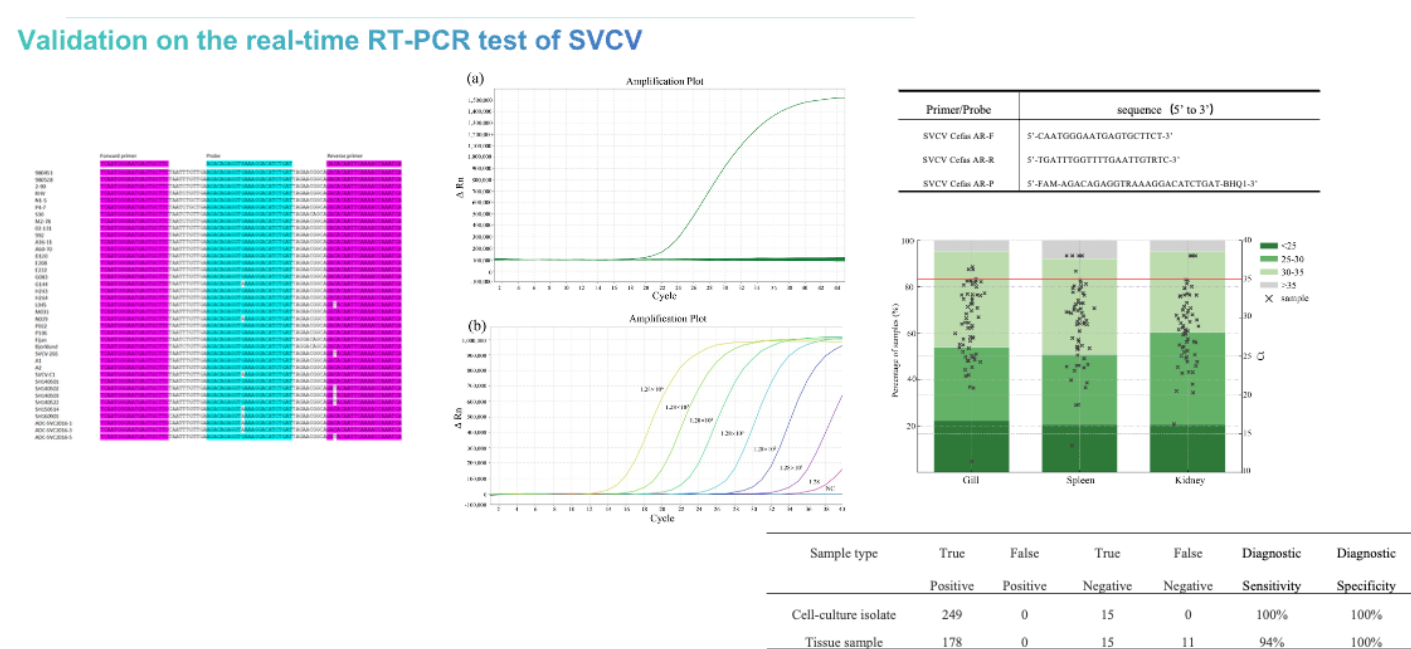
BSL-2 certificate



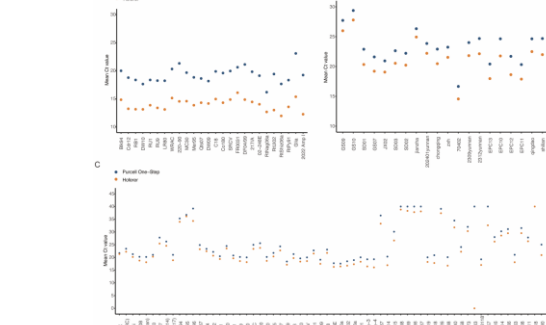
1800 facilities

3. Recent innovations, research highlights, technical developments

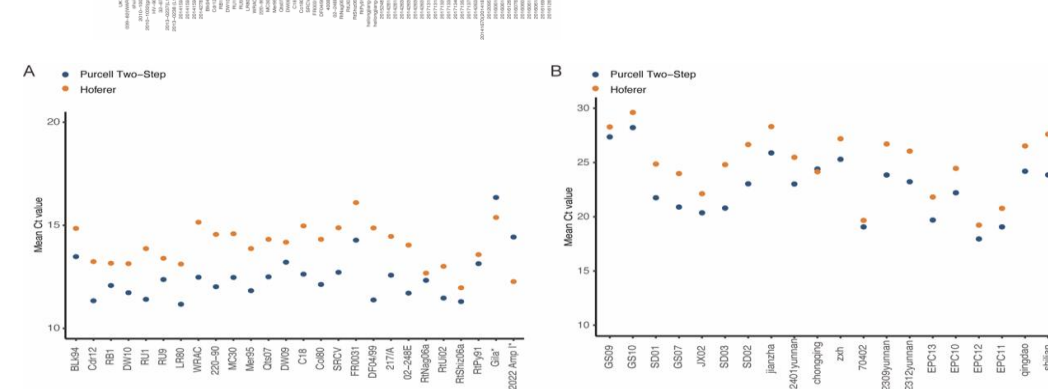
Validation on the real-time RT-PCR test of SVCV



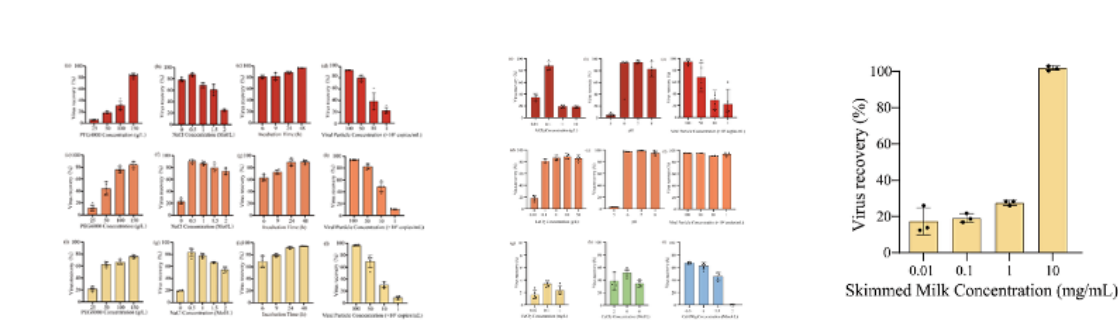
SVCV real-time RT-PCR validation



IHN RT-qPCR assay comparison



SVCV eDNA enrichment in water



SVCV RAA/RPA-CRISPR/Cas13a

Diagnostic validation

SVCV Cefas RT-qPCR assessed through international cooperation with CEFAS, UK.

Excellent diagnostic specificity; strong performance in cell-culture isolates and tissue samples.

IHN WOAHO assay review

Purcell and Hoferer RT-qPCR assays evaluated across laboratories

Environmental surveillance tools

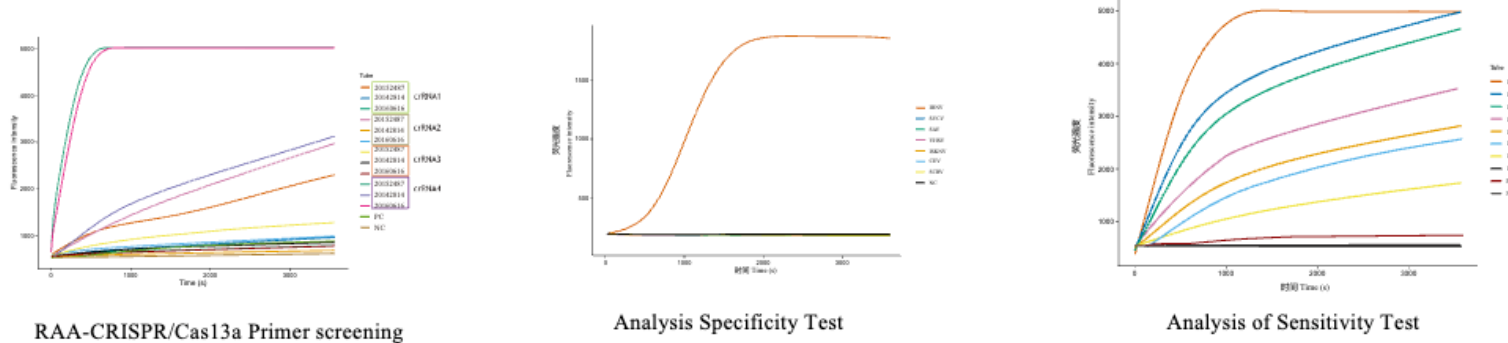
Nine enrichment strategies for SVCV eDNA in water environments compared and optimised.

PEG precipitation, metal ion flocculation, skimmed milk adsorption and commercial kits evaluated.

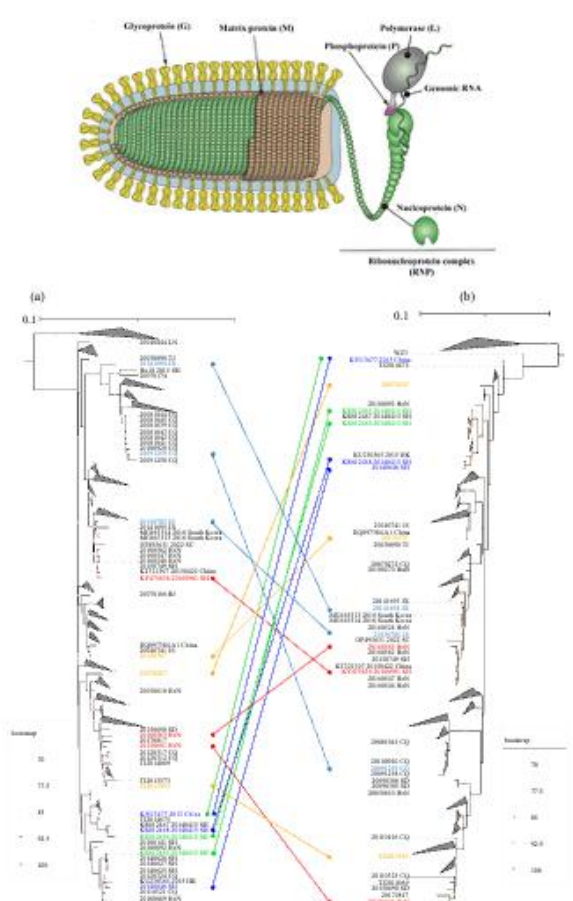
Rapid molecular tests

RAA/RPA-CRISPR/Cas13a tests developed for SVCV and IHN.

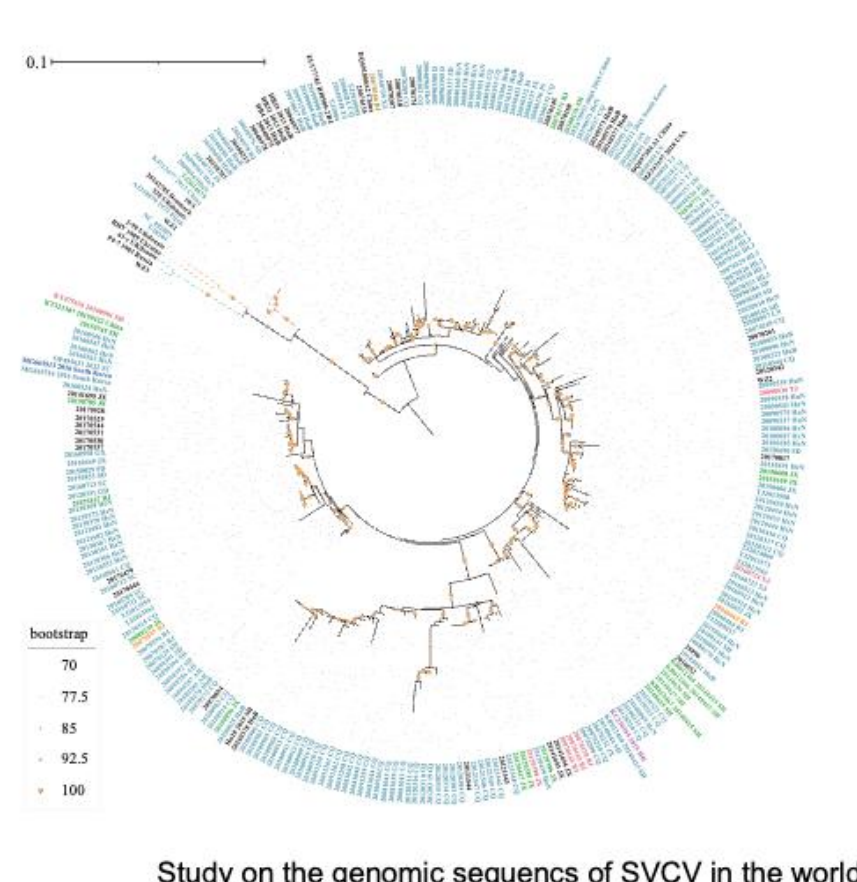
Analytical sensitivity, specificity, reproducibility and actual sample performance evaluated.



IHN RAA/RPA-CRISPR/Cas13a



SVCV global genomic sequences



Key forward priorities

01 Epidemiology

Collection on the epidemiological information
Molecular study and genotyping

02 eDNA

International cooperation
Optimization
Practice
Standardization

03 Validation on new tests

Validation and recommendation
Reference substances preparation and distribution

04 Prevention and control measure

Medicine
Vaccine
Biosecurity measure (Compartmentalization)

Future directions

Epidemiology and genotyping • eDNA practice and standardisation • Validation and recommendation of new tests • Reference substances • Prevention and control measures

4. How can we support Members?

Members may seek support in:

Confirmatory testing and interpretation of SVCV / IHN diagnostic results.

Selection, validation and harmonisation of RT-PCR, RT-qPCR and rapid molecular assays.

Surveillance design, sampling strategy and molecular epidemiology / genotyping analysis.

Training, seminars, technical consultation, proficiency testing and reference testing.

Preparation, evaluation and distribution of reference substances and positive controls.

Collaboration and capacity building:

Research collaboration on eDNA surveillance, assay optimisation and aquatic animal pathogen detection.

Internship / training opportunities in aquatic animal disease diagnostics.

Technical exchange with WOAHO Members and Reference Centres.

Potential Twinning programmes and regional workshops for aquatic animal health laboratories.

Contact information

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Scope: WOAHO Reference Laboratory for infection with spring viraemia of carp virus; WOAHO Reference Laboratory for infectious haematopoietic necrosis.

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