

WOAH Reference Laboratory Reports Activities 2022

Activities in 2022

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Laboratory Information

Name of disease (or topic) for which you are a designated WOA Reference Laboratory:	Infectious Hematopoietic Necrosis Virus
Address of laboratory:	Pacific Biological Station, 3190 Hammond Bay Road, Nanaimo, British Columbia, Canada, V9T 6N7
Tel.:	2507567340
E-mail address:	kyle.garver@dfo-mpo.gc.ca
Website:	https://profils-profiles.science.gc.ca/en/profile/kyle-garver
Name (including Title) of Head of Laboratory (Responsible Official):	Andrew Thomson
Name (including Title and Position) of WOA Reference Expert:	Kyle Garver, PhD, Research Scientist
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 WOA Manual (Yes/No)	Total number of test performed last year	
Indirect diagnostic tests		Nationally	Internationally
Direct diagnostic tests		Nationally	Internationally
RT-qPCR	YES	1301	

			175
RT-PCR	YES	29	
Virus Isolation via cell culture	YES	6	

TOR2: REFERENCE MATERIAL

2. Did your laboratory produce or supply imported standard reference reagents officially recognised by WOA?H?

No

3. Did your laboratory supply standard reference reagents (nonWOAH-approved) and/or other diagnostic reagents to WOA?H Members?

Yes

TYPE OF REAGENT AVAILABLE	RELATED DIAGNOSTIC TEST	PRODUCED/ PROVIDE	AMOUNT SUPPLIED NATIONALLY (ML, MG)	AMOUNT SUPPLIED INTERNATIONALLY (ML, MG)	NO. OF RECIPIENT WOA?H MEMBER COUNTRIES	COUNTRY OF RECIPIENTS
Liquid extraction controls - Artificial RNA transcript containing target binding sites seeded into cell culture suspension	RT-qPCR (Purcell et al. 2013)	Produced	5 aliquots (1.25 mL)	0	1	America
RT controls- Artificial RNA transcript	RT-qPCR	Produced	17 aliquots (0.2 mL)	0	1	America
qPCR controls - cDNA generated from Artificial RNA transcript	RT-qPCR	Produced	40 aliquots (0.5 mL)	0	1	
Cell cultures	Virus isolation	Produced	4 flasks	0	1	Asia and Pacific

4. Did your laboratory produce vaccines?

No

5. Did your laboratory supply vaccines to WOA?H 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 WOA?H Standards for the designated pathogen or disease?

No

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

No

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

No

TOR4: DIAGNOSTIC TESTING FACILITIES

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

No

11. Did your laboratory provide expert advice in technical consultancies on the request of an WOAH Member?

Yes

NAME OF THE WOAH MEMBER COUNTRY RECEIVING A TECHNICAL CONSULTANCY	PURPOSE	HOW THE ADVICE WAS PROVIDED
CANADA	Provide advice on species susceptibilities, occurrence of IHN in Sockeye Salmon, and eDNA methodologies	Remote
DENMARK	Provide information on vaccination and diagnostic methods	Remote
POLAND	Provide advice on isolates and shipping regulations	Remote

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
Epidemiology of IHN in the North Pacific	2018-2025	Genotype IHN in Western North American Waters	Western Fisheries Research Center	UNITED STATES OF AMERICA
Diagnostic methods for EHN	2022-2026	Develop and validate detection methods for EHN	CSIRO - ACDP Fish Diseases Laboratory	AUSTRALIA

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:

Surveillance of wild and farmed salmon stocks for prevalence of IHN

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:

Nucleic acid detection of IHNV in wild and farmed salmon stocks of Canada and characterization of host response.

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:

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1. Aamelfot M, Fosse JH, Viljugrein H, Ploss FB, Benestad SL, McBeath A, et al. (2022) Destruction of the vascular viral receptor in infectious salmon anaemia provides in vivo evidence of homologous attachment interference. *PLoS Pathog* 18(10): e1010905. <https://doi.org/10.1371/journal.ppat.1010905>

2. Polinski, M.P., Gross, L.A., Marty, G.D. et al. Heart inflammation and piscine orthoreovirus genotype-1 in Pacific Canada Atlantic salmon net-pen farms: 2016–2019. *BMC Vet Res* 18, 306 (2022). <https://doi.org/10.1186/s12917-022-03409-y>

b) International conferences:

c) National conferences:

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

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1. Garver, K.A., Hawley, L.M., Thiessen, L., Harborne, M., Berdan, C. and Lofthouse, D. 2022. Report on the occurrence of infectious hematopoietic necrosis disease in out-migrating Sockeye Salmon fry at Pinkut Creek Spawning Channel in the spring of 2021. *Can. Tech. Rep. Fish. Aquat. Sci.* 3478: iv + 17 p.

TOR7: SCIENTIFIC AND TECHNICAL TRAINING

17. Did your laboratory provide scientific and technical training to laboratory personnel from other WOA Members?

No

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	ASB_SOA_151008_Scope_v4_2021-07-15.pdf

19. Is your quality management system accredited?

Yes

Test for which your laboratory is accredited	Accreditation body
Reverse Transcription Quantitative PCR for Detection of Infectious Hematopoietic Necrosis Virus (IHN)	Standards Council of Canada
Isolation of Viral Agents (IPNV, IHN, EHN, SVCV, ISAV, SAV, & VHSV) from Finfish by Cell Culture	Standards Council of Canada
Reverse Transcription Quantitative PCR for Detection of Viral Hemorrhagic Septicemia Virus (VHSV)	Standards Council of Canada
Reverse transcription quantitative PCR assay for detection of infectious pancreatic necrosis virus (IPNV)	Standards Council of Canada
RT-qPCR Test Method Protocol using TaqMan Universal PCR Master Mix for the Detection of Infectious Salmon Anemia Virus	Standards Council of Canada
Histological Detection and Identification of Bivalve Mollusc Pathogens	Standards Council of Canada

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

Yes

Maintain laboratory compliance for Level 2 Invitro facilities in accordance with Canadian Biosafety Standard and Containment Standards for Facilities handling Aquatic Animal Pathogens

TOR9: SCIENTIFIC MEETINGS

21. Did your laboratory organise scientific meetings related to the pathogen in question on behalf of WOA?

No

22. Did your laboratory participate in scientific meetings related to the pathogen in question on behalf of WOA?

No

TOR10: NETWORK WITH WOA REFERENCE LABORATORIES

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

No

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

No

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

No

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

No

TOR11: OTHER INTERLABORATORY PROFICIENCY TESTING

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

Yes

Purpose for inter-laboratory test comparisons ¹	Role of your reference laboratory (organizer/participant)	No. participating laboratories	Region(s) of participating WOA Member Countries
Assess competency of diagnosis of fish diseases including IHN (Participate in the inter-laboratory PT from EU Reference Laboratory for fish & crustacean diseases)	Participant	46	America Asia and Pacific Europe MiddleEast
Checking and certifying the performance of individual operators	Organizer	3	America

TOR12: EXPERT CONSULTANTS

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

Yes

KIND OF CONSULTANCY	Location	SUBJECT (FACULTATIVE)
responding to specific technical queries from OIE	remote	Aquatic Standards Animal Health Commission Reports

29. Additional comments regarding your report: