World Organisation for Animal Health

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WOAH Collaborative Centre Reports Activities 2025

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CENTRE INFORMATION

***Title of WOAH Collaborating Centre**	Reference Materials of Molecular Diagnostic Techniques in Aquatic and Terrestrial Animal Diseases
***Address of WOAH Collaborating Centre**	NIFS (National Institute of Fisheries Science, under the Ministry of Oceans and Fisheries, MOF) and APQA (Animal and Plant Quarantine Agency, under Ministry of Agriculture, Food and Rural Affairs, MAFRA)
***Tel:**	+82517202114
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Website:	https://www.nifs.go.kr/fishguard/woah02
***Name Director of Institute (Responsible Official):**	Yongseok Choi (NIFS) & Jung-rok Choi (APQA)
***Name (including Title and Position) of Head of the Collaborating Centre (WOAH Contact Point):**	Hyoung Jun Kim, Ph.D. (Senior Researcher) & Kyoung Ki Lee, Ph.D. (Senior Researcher)
***Name of the writer:**	Hyoung Jun Kim & Kyoung Ki Lee

TOR 1 AND 2: SERVICES PROVIDED

1. Activities as a centre of research, expertise, standardisation and dissemination of techniques within the remit of the mandate given by WOAH

Category	Title of activity	Scope
Diagnosis, biotechnology and laboratory (true)	Development and Sharing the Reference Materials of Molecular Diagnostic Techniques in Aquatic and Terrestrial Animal Diseases	Reference Materials of Molecular Diagnostic Techniques in Aquatic and Terrestrial Animal Diseases

TOR 3: HARMONISATION OF STANDARDS

2. Proposal or development of any procedure that will facilitate harmonisation of international regulations applicable to the main fucus area for which you were designated

Proposal title	Scope/Content	Applicable Area
Validation of Conventional RT-PCR method for VHSV gene detection using	1. 4.4.2. Conventional RT-PCR & 4.5. Amplicon sequencing; https://www.woah.org/fileadmin/Home/eng/Health_standards/aahm/current/2.3.10_VHS.pdf 2. Validation of a novel one-step reverse transcription PCR method for detecting viral haemorrhagic septicaemia virus. Aquaculture 492, 170-183 3. Importance of the 3'-terminal	Laboratory Expertise

novel 3F2R primer set (updated on WOAH diagnostic manual for VHS)	nucleotide of the forward primer for nucleoprotein gene detection of viral hemorrhagic septicemia virus by conventional reversetranscription PCR. Indian Journal of Microbiology 59(2): 234-236	

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

Yes

Research need 1

Please type the Research need: Revision of conventional RT-PCR method for VHSV gene detection in WOAH diagnostic manual for VHS

Relevance for WOAH Disease Control, Capacity Building, Standard Setting, Facilitation of international collaboration,

Relevance for the Code or Manual Code, Manual,

Field Epidemiology and Surveillance, Diagnostics,

Animal Category Aquatic,

Disease:

Infection with viral haemorrhagic septicaemia 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:

Notes:

Answer: Aquatic Manual Chapter 4.4.2. Conventional RT-PCR & 4.5. Amplicon sequencing; https://www.woah.org/fileadmin/Home/eng/Health_standards/aahm/current/2.3.10_VHS.pdf

4. Did your Collaborating Centre maintain a network with other WOAH Collaborating Centres (CC), Reference Laboratories (RL), or organisations designated for the same specialty, to coordinate scientific and technical studies?

Yes

Name of WOAH CC/RL/other organisation(s)	Location	Region of networking Centre	Purpose
WOAH reference laboratory for VHS in Denmark (DTU Aqua)	Denmark	Europa	1. Co-research to find the VHSV virulence factor using recombinant VHSV 2. Experiment and validation of multiple PCR positive material for fish & crustacean diseases
WOAH reference laboratory for Bonamia exitiosa, Bonamia ostreae, Marteilia refringens, Marteilia sydneyi in France (IFREMER)	France	Europa	Experiment and validation of multiple PCR positive material for molluscs diseases
WOAH collaborating centre for antimicrobial strewardship in Aquaculture (CASA)	Chile	América	Cooperation of biosecurity and work for WOAH collaborating centre between Korea and Chile
WOAH reference laboratory for RSIVD in			Cooperation research for iridovirus culture method and

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Japan	Japan	Asia y el Pacífico	validation of diagnostic method

TOR 4 AND 5: NETWORKING AND COLLABORATION

5. Did your Collaborating Centre maintain a network with other WOAH Collaborating Centres, Reference laboratories, or organisations in other disciplines, to coordinate scientific and technical studies?

Yes

Name of WOAH CC/RL/other organisation(s)	Location	Region of networking Centre	Purpose
WOAH reference laboratory for VHS in Denmark (DTU Aqua)	Denmark	Europe	1. Co-research to find the VHSV virulence factor using recombinant VHSV 2. Experiment and validation of multiful PCR positive material for fish & crustacean diseases
WOAH reference laboratory for Bonamia exitiosa, Bonamia ostreae, Marteilia refringens, Marteilia sydneyi in France (IFREMER)	France	Europe	Experiment and validation of multiple PCR positive material for molluscs diseases
WOAH collaborating centre for antimicrobial strewardship in Aquaculture (CASA)	Chile	Americas	Cooperation of biosecurity and work for WOAH collaborating centre between Korea and Chile
WOAH reference laboratory for RSIVD in Japan	Japan	Asia and Pacific	Cooperation research for iridovirus culture method and validation of diagnostic method

TOR 6: EXPERT CONSULTANTS

6. Did your Collaborating Centre place expert consultants at the disposal of WOAH?

Yes

Name of expert	Kind of consultancy	Subject
Dr. Hyoung Jun Kim	Meeting in WOAH general assembly and online meeting for Ecuador	Enhance of the diagnostic capacity using reference materials from WOAH CC in Korea
Dr. Hyoung Jun Kim	Meeting in WOAH general assembly for Peru	Enhance of the diagnostic capacity using reference materials from WOAH CC in Korea
Dr. Hyoung Jun Kim	Meeting and training by KOICA program for Fiji	enhance the disgnostic capacity against animal diseases

TOR 7: SCIENTIFIC AND TECHNICAL TRAINING

7. Did your Collaborating Centre provide advice/services to requests from Members in your main focus area?

No

8. Did your Collaborating Centre provide scientific and technical training, within the remit of the mandate given by WOAH, to personnel from WOAH Members?

Yes

a) Technical visit : 0

b) Seminars : 99

c) Hands-on training courses: 12

d) Internships (>1 month) : 0

Type of technical training provided (a, b, c or d)	Content	Country of origin of the expert(s) provided with training	No. participants from the corresponding country
B	12th workshop on diagnosis of animal diseases by WOAH reference laboratories of APQA	Nepal	2
B	12th workshop on diagnosis of animal diseases by WOAH reference laboratories of APQA	Laos	2
B	12th workshop on diagnosis of animal diseases by WOAH reference laboratories of APQA	Malaysia	2
B	12th workshop on diagnosis of animal diseases by WOAH reference laboratories of APQA	Myanmar	2
B	12th workshop on diagnosis of animal diseases by WOAH reference laboratories of APQA	Bangladesh	2
B	12th workshop on diagnosis of animal diseases by WOAH reference laboratories of APQA	Sri Lanka	2
B	12th workshop on diagnosis of animal diseases by WOAH reference laboratories of APQA	Singapore	2
B	12th workshop on diagnosis of animal diseases by WOAH reference laboratories of APQA	Thailand	2
B	12th workshop on diagnosis of animal diseases by WOAH reference laboratories of APQA	Philippines	1

B	Regional seminar for WOAH national focal points for veterinary products for Asia and the Pacific	24 Aisa-Pacific countries	68
B	Seminar on strengthening capacity for terrestrial animal diseases diagnosis in Fiji	Fiji	12
C	Technical training on strengthening capacity for terrestrial animal diseases diagnosis in Fiji(molecular techniques and antibody tests)	Fiji	12
B	Seminar on strengthening capacity for aquatic animal diseases diagnosis in Fiji	Fiji	12
C	Technical training on strengthening capacity for aquatic animal diseases diagnosis in Fiji(molecular techniques and cell culture method)	Fiji	12

TOR 8: SCIENTIFIC MEETINGS

9. Did your Collaborating Centre organise or participate in the organisation of scientific meetings related to your main focus area on behalf of WOAH?

Yes

National/International	Title of event	Co-organiser	Date	Location	No. Participants
Internationally	WOAH Collaborating Centres Meeting for aquatic animals	6 WOAH Collaborating Centres for Aquatic Animals	2025-06-30	Zoom meeting	20
Internationally	Cooperation of biosecurity and work for WOAH collaborating centre between Korea and Chile	CASA(Chile) & NIFS(Korea)	2025-04-17	Chile	20

TOR 9: DATA AND INFORMATION DISSEMINATION

10. Publication and dissemination of any information within the remit of the mandate given by WOAH that may be useful to Members of WOAH

a) Articles published in peer-reviewed journals:

8

APQA 1. Pathogenic Characteristics of Five Different Lineage of Korean PRRSV-2 Isolates (NADC30-Like, VR2332-Like, LKA, LKB, and LKC)

APQA 2. Molecular characteristics of feline coronavirus in South Korea, 2016-2023

APQA 3. Immunopathological features of highly pathogenic Korean Lineage B PRRSV-2: insights into virulence indicators and host immune responses

NIFS 1. Improved Detection Sensitivity of Spring Viremia of Carp Virus by Substituting a Two-Step with a One-Step Nested Reverse Transcription Polymerase Chain Reaction Method

NIFS 2. Development of a neutralization Ccombody, synthetic hagfish antibody, for viral hemorrhagic septicemia virus (VHSV) targeting glycoprotein G

NIFS 3. Molecularly Imprinted Poly(o-aminophenol)-Based Electrochemical Sensor for the Quantitative Detection of a VP28 Biomarker for White Spot Syndrome Virus

NIFS 4. Validation of a dual-probe quantitative reverse transcription polymerase chain reaction for rapid detection of spring viremia of carp virus

NIFS 5. Evaluation of Inactivated Snakehead Rhabdovirus as an Internal Positive Control for RT-qPCR Diagnosis of Viral Hemorrhagic Septicemia Virus in Fish

b) International conferences:

2

APQA. Pathogenesis of Korean NADC-like Porcine Reproductive and Respiratory SyndromeVirus in piglets(AVMA Convention 2025 & 40thWVAC)

NIFS. Development of a novel strategy to reduce diagnostic errors of fish diseases using reference material in conventional PCR and real-time PCR (KOFFST international conference 2025)

c) National conferences:

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

11. What have you done in the past year to advance your area of focus, e.g. updated technology?
APQA. Develpoment and validation of multiple positive materials for 34 terrestrial animal diseases by animal species(Multi-species 9, cattles 7, pigs 7, horses 5, poultry 6)

NIFS. International validation of multiful PCR positive material for Fish and Molluscs diseases in EU reference laboratories (DTU in Denmark, IFREMER in France)

12. Additional comments regarding your report:
Our WOAH Collaborating Centre in the aquatic sector (NIFS) secured an annual dedicated budget and professional staff from the Government of the Republic of Korea for its operations in 2025.