

WOAH Reference Laboratory Reports Activities 2022

Activities in 2022

This report has been submitted : 25 avril 2023 13:06

Laboratory Information

Name of disease (or topic) for which you are a designated WOAHO Reference Laboratory:	Infection with white spot syndrome virus
Address of laboratory:	No.500, Sec. 3, Anming Rd., Annan Dist., Tainan City 709, Taiwan
Tel.:	+886-6-384-2448
E-mail address:	wanghc@mail.ncku.edu.tw
Website:	https://sites.google.com/gs.ncku.edu.tw/icdsa-zh/%E9%A6%96%E9%A0%81
Name (including Title) of Head of Laboratory (Responsible Official):	Dr. Han-Ching Wang
Name (including Title and Position) of WOAHO Reference Expert:	Dr. Han-Ching Wang
Which of the following defines your laboratory? Check all that apply:	Academic institution

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 WOAHO Manual (Yes/No)	Total number of test performed last year	
Indirect diagnostic tests		Nationally	Internationally
IQ2000 (PCR)	YES	456	53
Real-time PCR	NO	1284	
Western Blots	No	168	

Direct diagnostic tests		Nationally	Internationally

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
WSSV purified virions	--	provide		1.8 ml	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 WOA?H Members?

No

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

Yes

NAME OF THE WOA?H MEMBER COUNTRY RECEIVING A TECHNICAL CONSULTANCY	PURPOSE	HOW THE ADVICE WAS PROVIDED
ISRAEL	WSSV-related scientific issues	Remote/in loco

TOR5: COLLABORATIVE SCIENTIFIC AND TECHNICAL STUDIES

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

Yes

Title of the study	Duration	PURPOSE OF THE STUDY	PARTNERS (INSTITUTIONS)	WOAH MEMBER COUNTRIES INVOLVED OTHER THAN YOUR COUNTRY
WSSV/shrimp interaction	7 years	WSSV/shrimp interaction 7 years Mechanisms of anti-viral protein interaction and signalling pathways Chulalongkorn University, Thailand Thailand	Chulalongkorn University, Thailand	THAILAND
WSSV/Shrimp interactome	First year	Integrative omics strategy for Shrimp-WSSV interactome to elucidate viral pathogenesis and host responses	Arizona University	UNITED STATES OF AMERICA
WSSV/Shrimp interactome	First year	Integrative omics strategy for Shrimp-WSSV interactome to elucidate viral pathogenesis and host responses	Tokyo University of Marine Science and Technology	JAPAN
WSSV/Shrimp interactome	First year	Integrative omics strategy for Shrimp-WSSV interactome to elucidate viral pathogenesis and host responses	Biotech, NSTDA	THAILAND
WSSV/Shrimp interactome	First year	Integrative omics strategy for Shrimp-WSSV interactome to elucidate viral pathogenesis and host responses	Chulalongkorn University.	THAILAND
WSSV/Shrimp interactome	First year	Integrative omics strategy for Shrimp-WSSV interactome to elucidate viral pathogenesis and host responses	Malaya University.	MALAYSIA
WSSV/Shrimp interactome	First year	Integrative omics strategy for Shrimp-WSSV interactome to elucidate viral pathogenesis and host responses	Santo Tomas University.	PHILIPPINES
Developing diagnostic tools First year Developing diagnostic tools for WSSV to support global shrimp aquaculture Arizona University. America	First year	Developing diagnostic tools for WSSV to support global shrimp aquaculture	Arizona University	UNITED STATES OF AMERICA

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:

We collected and analyzed WSSV-related samples

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:

We published our epidemiological findings for WSSV as scientific papers.

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:

4

1. Ng YS, Lee DY, Liu CH, Tung CY, He ST, Wang HC* (2022) White Spot Syndrome Virus (WSSV) triggers glycolytic pathway in shrimp immune cells (hemocytes) to benefit its replication. *Front. Immunol.* 13:901111.. Ranking: 0.204 (IMMUNOLOGY, 33/161), IF: 8.786.
2. Hsu CK, Hsu TK, Kannan J, Wang HC, Tassanakajon A, Chen LL* (2022) Diagnostic performance of a Rapid Test Kit for white spot syndrome virus (WSSV). *Aquaculture.* 15: 738379. Ranking:0.7 (MARINE & FRESHWATER BIOLOGY, 8/113), IF: 5.135
3. Chen YL, Kumar R, Liu CH, Wang HC* (2022) *Litopenaeus vannamei* peritrophin interacts with WSSV and AHPND-causing *V. parahaemolyticus* to regulate disease pathogenesis. *Fish Shellfish Immunol.* 126: 271-282. Ranking: 0.041 (VETERINARY SCIENCES, 6/144), IF: 4.622.
4. Huang YH, Kumar R, Liu CH, Lin SS, Wang HC* (2022) A novel C-type lectin LvCTL 4.2 has antibacterial activity but facilitates WSSV infection in shrimp (*L. vannamei*) *Dev. Comp. Immunol.* 126:104239. Ranking: 0.051 (ZOOLOGY, 9/176), IF: 3.605.

b) International conferences:

25

1. Wang HC*. (2022). "Modulating Shrimp Gut Health to Explore the Microbiota Resilience in Response to the Shift Between Health and Disease" "4th Congress of the International Society of Fish & Shellfish Immunology" Bodø, Norway. December 12-15. 2022. (Oral presentation)
2. Wang HC*. (2022). "A collection of wisdom: an imperative for facilitating shrimp aquaculture to grow successfully and sustainably" "49th Philippine Society of Biochemistry and Molecular Biology Convention" Online. Nov. 25, 2022. (Oral presentation) (Plenary speaker)
3. Wang HC* (2022). "Promoting effective shrimp aquaculture by comprehensive and collaborative approach" 16th International Symposium on Biocatalysis and Agricultural Biotechnology November 9- 11, 2022. (Oral presentation) (Invited Speaker)
4. Lo CF* (2022). *Aquaculture and the Challenges of Sustainability.* "13th Asian Fisheries and Aquaculture Forum (13AFAF)" Tainan, Taiwan. May 31~June 2. 2022. (Keynote Speaker)
5. Wang HC* (2022) A comprehensive and collaborative approach is critical to promote successful shrimp aquaculture. "The 2nd International Conference on Sustainable Aquaculture: Health and Disease Management (Aqua-Thailand)" March 17-18, 2022. (Keynote Speaker)

6. Chen CY, Lee DY, Liu CH, Lin SS, Wang HC* (2022) Glucose and glutamine contributed to de novo nucleotide synthesis to support white spot syndrome virus pathogenesis. "4th Congress of the International Society of Fish & Shellfish Immunology" Bodø, Norway. December 12-15, 2022. (Oral presentation- Student travel bursary winner)
7. Cheng SW, Wang HC* (2022). White Spot Syndrome Virus Infection was Aided in Glutamic-Pyruvic Transaminase "4th Congress of the International Society of Fish & Shellfish Immunology" Bodø, Norway. December 12-15, 2022. (Oral presentation)
8. Ng YS, Senapin S, Sangsuriya P, Wang HC* (2022). Involvement of WSSV proteins in regulating shrimp LDH "4th Congress of the International Society of Fish & Shellfish Immunology" Bodø, Norway. December 12-15, 2022. (Oral presentation)
9. Huang GL, Liu CH, Wang HC* (2022). GOT1/2 may be involved in WSSV-induced glutamine metabolism. "4th Congress of the International Society of Fish & Shellfish Immunology" Bodø, Norway. December 12-15, 2022. (Poster presentation)
10. Chen CL and Wang HC* (2022). Pyrimidine synthesis after virus infection of white shrimp. "4th Congress of the International Society of Fish & Shellfish Immunology" Bodø, Norway. December 12-15, 2022. (Poster presentation)
11. Chen CY, Wang HC* (2022). Promote global competence in the young generation to ensure their ability to participate on the global stage and shape the future of aquaculture. "The 4th International Symposium on Aquaculture and Fisheries Education" Pingtung, Taiwan. October 7, 2022. (Oral presentation) (Invited Speaker)
12. Kumar R, Chen YL, Liu CH, Wang HC*. (2022). Peritrophin is critical in pathogenesis of acute hepatopancreatic necrosis disease and white spot syndrome in *Litopenaeus vannamei*. "13th Asian Fisheries and Aquaculture Forum", Tainan, Taiwan. May 31-June 2, 2022. (Poster presentation)
13. Ng YS, Senapin S, Sangsuriya P, Wang HC*. (2022). Role of White Spot Syndrome Virus viral protein in regulating shrimp lactate dehydrogenase. "13th Asian Fisheries and Aquaculture Forum", Tainan, Taiwan. May 31-June 2, 2022. (Poster presentation - First prize)
14. Chen CY, Lee DY, Liu CH, Lin SS, Wang HC*. (2022). The involvement of de novo nucleotide biosynthesis pathway during White Spot Syndrome Virus pathogenesis. "13th Asian Fisheries and Aquaculture Forum", Tainan, Taiwan. May 31-June 2, 2022. (Oral presentation- First prize)
15. Tan YK, Wang HC*. (2022). SIRT4 is involved in White Spot Syndrome Virus-induced metabolic changes and replication. "13th Asian Fisheries and Aquaculture Forum", Tainan, Taiwan. May 31-June 2, 2022. (Oral presentation- First runner up)
16. Chen CL, Wang HC*. (2022). Explore the role of white shrimp CAD in the pyrimidine synthesis reaction of virus-infected cells. "13th Asian Fisheries and Aquaculture Forum", Tainan, Taiwan. May 31-June 2, 2022. (Poster presentation- First runner up)
17. Huang GL, Wang HC* (2022). Effect of GOT1/2 in white shrimp (*Litopenaeus vannamei*) on WSSV replication. "13th Asian Fisheries and Aquaculture Forum", Tainan, Taiwan. May 31-June 2, 2022. (Poster presentation)
18. Zheng SW, Wang HC* (2022). The role of Glutamic-pyruvic transaminase in white spot syndrome virus (WSSV) infection of shrimp. "13th Asian Fisheries and Aquaculture Forum", Tainan, Taiwan. May 31-June 2, 2022. (Poster presentation)
19. Kumar R, Chen YL, Liu CH, Wang HC*. (2022). Peritrophin is critical in pathogenesis of acute hepatopancreatic necrosis disease and white spot syndrome in *Litopenaeus vannamei*. "13th Asian Fisheries and Aquaculture Forum", Tainan, Taiwan. May 31-June 2, 2022. (Poster presentation)
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21. Chen CY, Lee DY, Liu CH, Lin SS, Wang HC*. (2022). The involvement of de novo nucleotide biosynthesis pathway during White Spot Syndrome Virus pathogenesis. "13th Asian Fisheries and Aquaculture Forum", Tainan, Taiwan. May 31-June 2, 2022. (Oral presentation- First prize)
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24. Huang GL, Wang HC*. (2022). Effect of GOT1/2 in white shrimp (*Litopenaeus vannamei*) on WSSV replication. "13th Asian Fisheries and Aquaculture Forum", Tainan, Taiwan. May 31-June 2, 2022. (Poster presentation)
25. Zheng SW, Wang HC*. (2022). The role of Glutamic-pyruvic transaminase in white spot syndrome virus (WSSV) infection of shrimp. "13th Asian Fisheries and Aquaculture Forum", Tainan, Taiwan. May 31-June 2, 2022. (Poster presentation)

c) National conferences:

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

1. International Center for the Scientific Development of Shrimp Aquaculture
<https://sites.google.com/view/icdsa/>

TOR7: SCIENTIFIC AND TECHNICAL TRAINING

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

Yes

a) Technical visit : 1

b) Seminars :

c) Hands-on training courses:

d) Internships (>1 month)

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
A	Israel	1

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	2020-2023 ISO17025 認證證書 (英文).pdf

19. Is your quality management system accredited?

Yes

Test for which your laboratory is accredited	Accreditation body
WSSV PCR detection	Taiwan Accreditation Foundation

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

Yes

Taiwan Accreditation Foundation

TOR9: SCIENTIFIC MEETINGS

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

No

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

No

TOR10: NETWORK WITH WOA H REFERENCE LABORATORIES

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

Yes

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
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PCR for WSSV detection

Organiser

1

Asia and Pacific

TOR12: EXPERT CONSULTANTS

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

Yes

KIND OF CONSULTANCY	Location	SUBJECT (FACULTATIVE)
OIE expert	remote	OIE Aquatic Manual progress update / Request for assistance for the chapter on infection with white spot syndrome virus

29. Additional comments regarding your report: