WOAH Reference Laboratory Reports Activities 2023

Activities in 2023

This report has been submitted : 5 juin 2024 13:58

Laboratory Information

Name of disease (or topic) for which you are a designated WOAH 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 24 48
E-mail address:	wanghc@mail.ncku.edu.tw
Website:	
Name (including Title) of Head of Laboratory (Responsible Official):	Dr. Han-Ching Wang
Name (including Title and Position) of WOAH 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 WOAH Manual (Yes/No)	Total number of test performed last year	
Indirect diagnostic tests		Nationally	Internationally
IQ2000 (PCR)		640	0
Direct diagnostic tests		Nationally	Internationally
Real-time PCR		299	0
Western Blots		156	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?

No

4. Did your laboratory produce vaccines?

No

5. Did your laboratory supply vaccines to WOAH 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 WOAH 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 WOAH 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?

No

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
WSSV/shrimp interaction	8 years	WSSV/shrimp interaction Mechanisms of anti-viral protein interaction and signalling pathways Chulalongkorn University, Thailand	Chulalongkorn University, Thailand	THAILAND
WSSV/Shrimp interactome	Second year	Integrative omics strategy for Shrimp-WSSV interactome to elucidate viral pathogenesis and host responses	Arizona University	UNITED STATES OF AMERICA
WSSV/Shrimp interactome	Second 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	Second year	Integrative omics strategy for Shrimp-WSSV interactome to elucidate viral pathogenesis and host responses	Biotec, NSTDA	THAILAND
WSSV/Shrimp interactome	Second year	Integrative omics strategy for Shrimp-WSSV interactome to elucidate viral pathogenesis and host responses	Malaya University	MALAYSIA
WSSV/Shrimp interactome	Second year	Integrative omics strategy for Shrimp-WSSV interactome to elucidate viral pathogenesis and host responses	Santo Tomas University.	PHILIPPINES
Develop an antibody targeting WSSV VP28	First year	Induce passive immunization in shrimp	Gyeongsang National University	KOREA (REP. OF)
Develop a probiotic bacterium expressing nanobody and/or dsRNAs against shrimp viral pathogen WSSV	First year	Induce passive immunization in shrimp	The National Fisheries Research and Development Institute's (NFRDI)	PHILIPPINES

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

No

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:

1

1. Huang HJ, Tang SL, Chang YC, Wang HoC, Ng TH, Garmann RF, Chen YW, Huang JY, Kumar R, Chang SH, Wu SR, Chao CY, Matoba K, Kenji I, Gelbart WM, Ko TP, Wang HJ, Lo CF, Chen LL, Wang HC*. (2023) Multiple Nucleocapsid Structural Forms of Shrimp White Spot Syndrome Virus Suggests a Novel Viral Morphogenetic Pathway. Int. J. Mol. Sci. 24: 7525. Ranking:0.231 (BIOCHEMISTRY & MOLECULAR BIOLOGY, 66/285) IF: 5.6.*

b) International conferences:

11

1. Chen CY, Lee DY, Liu CH, Lin SS, Wang HC (2023). White Spot Syndrome Virus facilitates and relies on host de novo nucleotide synthesis to support viral pathogenesis. "The 28th Biological Sciences Graduate Congress (28th BSGC)" Kuala Lumpur, Malaysia. December 14-15, 2023. (Oral presentation- Best oral presenter, 1st Prize)*
2. Wang HC (2023). Fostering Sustainability in Shrimp Aquaculture: Enhancing Disease Control and Shrimp Broodstock Breeding for a Sustainable Future. The FOSIC conference. Nov. 6-9, 2023, Nigeria (Plenary speaker; on-line)*
3. Wang HC (2023). "Empowering Shrimp Aquaculture: From Disease Control to Breeding Suitable P. monodon Broodstock for a Sustainable Future". Global Agri-food Scientific Symposium at Singapore International Agrifood Week (SIAW) 2023 November 1-2, Singapore (Invited speaker)*
4. Wang HC (2023). From Challenges to Solutions: Advancing Shrimp Aquaculture for a Sustainable Future. 13th Asia Pacific Marine Biotechnology Conference (APMBC) and 5th Australia New Zealand Marine Biotechnology Society Conference (5th ANZMBS) October 2-6, Adelaide, Australia (Plenary speaker)*
5. Cheng, SW, Liang, YC, Wang, HC (2023) Unveiling direct interactions between novel viral proteins and isocitrate dehydrogenase 1 during white spot syndrome virus infection. 13th Asia Pacific Marine Biotechnology Conference (APMBC) and 5th Australia New Zealand Marine Biotechnology Society Conference (5th ANZMBS) October 2-6, Adelaide, Australia (Oral presentation)*
6. Chen CY and Wang HC. (2023) White Spot Syndrome Virus facilitates and relies on host de novo nucleotide synthesis to support viral pathogenesis. "Fish Health Section Conference: From the Pillars to the Next" Bangkok, Thailand. Sep 6-8, 2023. (Oral presentation- Best Student Oral Presenter)*
7. Lo CF (2023). Passing on the Torch of Wisdom in Shrimp Aquaculture. "Fish Health Section Conference: From the Pillars to the Next" September 6-9, Bangkok, Thailand. (Plenary speaker)
8. Wang HC (2023). Taking up the Torch of Wisdom: An Interdisciplinary Cooperation of Science, Implementation and Vision for Shrimp Aquaculture Research. "Fish Health Section Conference: From the Pillars to the Next" September 6-9, Bangkok, Thailand. (Plenary speaker)*
9. Wang HC (2023). Activities in 2022/2023 & plans of OIE reference labs for shrimp WSD and AHPND. the 4th meeting of the ad hoc Steering Committee for the Regional Collaboration Framework on Aquatic Animal Health for Asia and the Pacific. June 29 (On-line), Busan, Korea. (Invited speaker)*
10. Wang HC, Lo CF (2023) A Long and Challenging Path from Bench to Shrimp Breeding. 2023 Science and Technology Undergraduate Research Symposium. April 25, 2023. Manila, Philippines (Keynote Speaker)*
11. Wang HC, Lo CF (2023) Challenges, Potential, Hopes and The Future of Shrimp Aquaculture. 2023 Taiwan-Africa Smart Sustainable Agriculture and Marine & Aquaculture Forum. Tainan, Taiwan. 24-25 March, 2023 (Oral presentation) (Invited Speaker)*

c) National conferences:

11

1. Castillo-Corea BRJ, Liang YJ, Wang HC (2023) Glutamine metabolism regulated by WSSV during virus replication in white shrimp (Litopenaeus vannamei). "The 4th International Forum on Marine Fish Breeding Technology and the Academic Seminar of the Taiwan Marine Biotechnology Society" Taipei, Taiwan. September 1, 2023. (First prize for poster competition)*
2. Wang HC (2023). An integrative omics analysis of the Shrimp-WSSV interactome: the Crucial Role of WSSV-induced Metabolism. "38th Biology Summer Camp", July 13-15, Taichung, Taiwan. (Invited speaker). Presented in Chinese.*
3. Ng YS, Senapin S, Sangsuriya P, Wang HC (2023) White spot syndrome virus proteins modulate LDH activity during infection. "3rd College of Bioscience and*

Biotechnology Research Day" Tainan, Taiwan, June 19, 2023 (Oral presentation)
4. Chen CY, Lee DY, Liu CH, Lin SS, Wang HC (2023) White Spot Syndrome Virus facilitates and relies on host de novo nucleotide synthesis to support viral pathogenesis. "3rd College of Bioscience and Biotechnology Research Day" Tainan, Taiwan. June 19, 2023. (Oral presentation- First place)*
5. Castillo-Corea BRJ, Liang YC, Wang HC (2023) Glutamine metabolism regulated by WSSV during virus replication in white shrimp (Litopenaeus vannamei). "3rd College of Bioscience and Biotechnology Research Day" Tainan, Taiwan. June 19, 2023. (Oral presentation)*
6. Huang KL, Liu CH, Wang HC (2023). The importance of GOT1/2 of white shrimp (Litopenaeus vannamei) in WSSV-induced glutaminolysis. "3rd College of Bioscience and Biotechnology Research Day" Tainan, Taiwan. June 19, 2023. (Oral presentation)*
7. Cheng SW, Wang HC (2023) Characterizing glutamate-pyruvate transaminase during white spot syndrome virus infection in Litopenaeus vannamei "3rd College of Bioscience and Biotechnology Research Day" Tainan, Taiwan, June 19, 2023 (Oral presentation- First runner-up)*
8. Chen CL, Wang HC. (2023). The role of CAD (carbamoyl-phosphate synthase/ aspartate carbamoyltransferase/ dihydroorotase) in de novo pyrimidine biosynthesis in WSSV-infected shrimp. "14th Outstanding Theses Presentation: To Publicize Theses, To Disseminate Knowledge ". May 18, 2023. (Oral presentation- Potential Elite Award)*
9. Huang KL, Wang HC. (2023). Role of LvGOT1/2 in WSSV-induced glutaminolysis. "14th Outstanding Theses Presentation: To Publicize Theses, To Disseminate Knowledge ". May 18, 2023. (Oral presentation- Best Stage Manners Award)*
10. Chen CL, Wang HC. (2023). Investigating the involvement of CAD after WSSV infection of white shrimp. "The fisheries society of Taiwan conference". January 7, 2023. (Poster presentation- Special mention)*
11. Huang KL, Liu CH, Wang HC. (2023). Involvement of LvGOT1/2 in WSSV-induced glutamine metabolism and its effect on viral replication. "The fisheries society of Taiwan conference". January 7, 2023. (Poster presentation- Special mention)*

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 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	UNITED STATES OF AMERICA	1
B	THAILAND	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/IEC 17025:2017; CNS 17085:2018	PDF	2023-2026 ISO17025.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 WOAH?

No

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

No

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. Do you network (collaborate or share information) with other WOAH Reference Laboratories designated for the same pathogen?

No

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

No

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?

No

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?

No

TOR12: EXPERT CONSULTANTS

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

Yes

KIND OF CONSULTANCY	Location	SUBJECT (FACULTATIVE)
OIE expert	remote	Report for the WOAH ad hoc group on susceptibility of crustacean species to infection with WOAH listed diseases/ Request for assistance to update the list of susceptible crustacean species to WSSV infection

29. Additional comments regarding your report: