
An emerging human eye disease is associated with aquatic virus zoonotic infection

In the format provided by the
authors and unedited

Supplementary Information
Supplementary Ethical approval document

青岛眼科医院医学伦理委员会
批 准 书

批准号 青眼伦审 2021 (19) 号

项目名称: 眼部水生物病毒感染途径及致病机制的研究

项目负责人: 潘晓晶 职称: 主任医师 联系电话: 18661801623

负责研究单位: 青岛眼科医院 青光眼科

评审意见: 眼部水生物病毒感染途径及致病机制的研究 的方案经伦理委员会审查:

☒ 符合伦理学要求, 可以按照此方案进行研究。

☐ 不符合伦理学要求, 请修改后报伦理委员会审查。

知情同意书: ☒ 有 ☐ 无

获取知情同意书方法: ☒ 适当 ☐ 不适当

青岛眼科医院医学伦理委员会

主任委员:

2021年 12 月



Medical Ethics Committee of Qingdao Eye Hospital

Approval Letter

Approval Number: QINGYANLUNSHEN 2021(19)

Project Title: Investigation of Ocular Aquatic Virus Infection Routes and Pathogenic Mechanisms

Principal Investigator: Pan Xiaojing

Title: Chief Physician

Contact Number: 18661801623

Responsible Research Unit: Glaucoma Department, Qingdao Eye Hospital

Ethics Review Opinion:

The protocol for the study titled "Investigation of Ocular Aquatic Virus Infection Routes and Pathogenic Mechanisms" has been reviewed by the Ethics Committee:

☒ The study meets ethical requirements and may proceed according to this protocol.

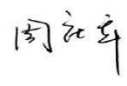
☐ The study does not meet ethical requirements; please revise and resubmit for committee review.

Informed Consent Form: ☒ Available ☐ Not Available

Method of Obtaining Informed Consent: ☒ Appropriate ☐ Inappropriate

Medical Ethics Committee of Qingdao Eye Hospital

Chairperson

Qingjun Zhou 

December 1, 2021

青岛眼科医院医学伦理委员会批件

批准号 青眼伦审（快）[2024]13 号

研究方案名称	病毒性葡萄膜炎继发青光眼的发病机制研究		
研究中心	青岛眼科医院		
研究科室	青光眼科	主要研究者	潘晓晶
审查类别	☒ 初始审查 ☐ 复审 ☐ 修正审查 ☐ 其他		
审查形式	☐ 会议审查 ☒ 快速审查 ☐ 紧急会议审查		
审查文件	(1) 研究方案 (2) 知情同意书 (3) 主要研究者履历		
审查日期	2024 年 2 月 23 日		
主审委员	姓名：陈楠	职务：委员	职称：主任医师
主审委员	姓名：吴洁	职务：委员	职称：副主任医师
审查意见和结果	审查意见： 同意 审查结果： ☒同意 ☐必要的修改后同意 ☐提交会议审查 ☐不同意 主任委员签字：  伦理委员会（盖章）：  日期：2024 年 2 月 23 日		

地址：青岛市市南区燕儿岛路 5 号，邮编：266000

Medical Ethics Committee of Qingdao Eye Hospital
Approval Letter

Approval Number: QINGYANLUNSHEN (Expedited) [2024]13

Research Protocol Title	Study on the Pathogenesis of Glaucoma Secondary to Viral Uveitis		
Research Center	Qingdao Eye Hospital		
Department	Department of Glaucoma	Principal Investigator	Xiaojing Pan
Review Category	☒ Initial Review ☐ Re-review ☐ Amendment Review ☐ Other		
Review Format	☐ Full Committee Review ☒ Expedited Review ☐ Emergency Meeting Review		
Documents Reviewed	(1) Research Protocol (2) Informed Consent Form (3) Curriculum Vitae of the Principal Investigator		
Review Date	February 23, 2024		
Primary Reviewer	Name: Chen Nan	Role: Committee Member	Title: Chief Physician
Primary Reviewer	Name: Wu Jie	Role: Committee Member	Title: Associate Chief Physician
Review Opinion and Decision	Review Opinion: Approved Decision: ☒ Approve ☐ Approve with Stipulations (Modifications Required) ☐ Refer to Full Committee Review ☐ Disapprove Signature of Chairperson: Chairperson Xiaojing Pan  February 23, 2024		

Address: No. 5 Yan'erdao Road, Shinan District, Qingdao City. Postal Code: 266000

Supplementary Information

Supplementary Data Fig. 2d2

Fig. 2d2-1.

The secondary mass spectrum of one (GIDIDYYLSDPDFLLRHCPRVLLHTFNPIKVGMDGSDPFTIQ) of the identified CMNV RdRp peptide fragments.

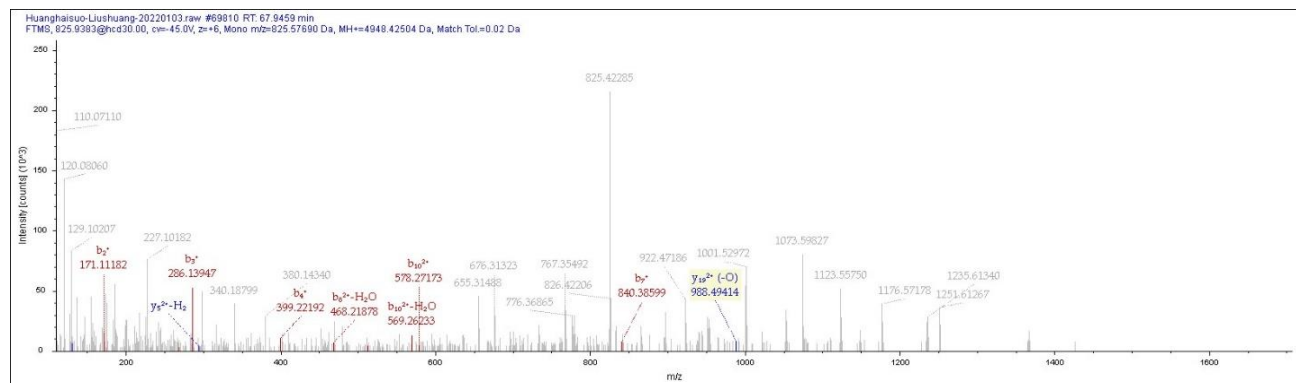


Fig. 2d2-2.

The secondary mass spectrum of one (GMKSPQAVSARLISLQYGDDPILMALVQYYLGTATANTMK) of the identified CMNV RdRp peptide fragments.

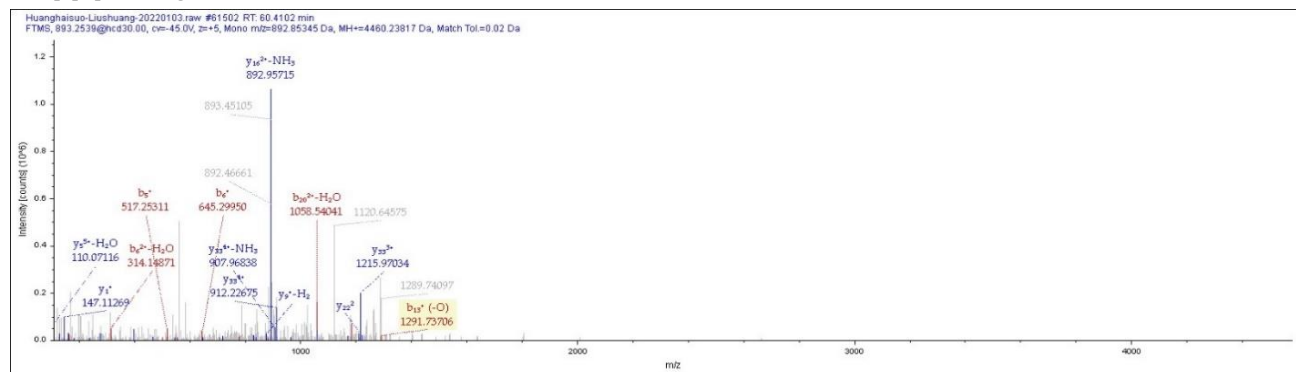


Fig. 2d2-3.

The secondary mass spectrum of one (LYNAFVEFVAYAMLFGSNFSASTIMDMIGPKYGDDGLSHNR) of the identified CMNV RdRp peptide fragments.

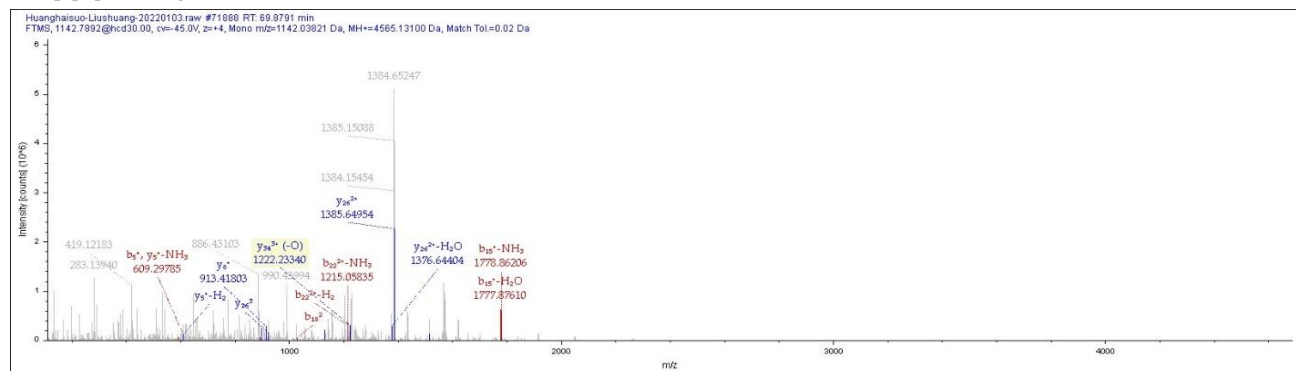


Fig. 2d2-4.

The secondary mass spectrum of one (NSEKPYWLTNDGSWPQNAADKDAMFNVLCA) of the identified CMNV RdRp peptide fragments.

Supplementary Information

Supplementary Table 1_Risk exposure mode questionnaire.

Tab. S1 Multiple linear regression analyses of IOP^a

	<i>B</i>	<i>SE</i>	β	<i>t</i>	<i>P</i>
Log (CMNV load)	3.05	0.77	0.44	3.98	<0.001
Age	-0.38	0.11	-0.39	-3.55	<0.001
Sex	0.3	2.71	0.01	0.11	0.912

Statistical analysis was performed using multiple linear regression. All statistical tests were two-tailed.

B: unstandardized coefficient; *SE*: standard error of the unstandardized coefficient; β : standardized coefficient.

^a Overall estimate of the multivariable regression model: $F=9.50$, $P<0.001$ (exact P-value is $P=0.000036$); $R^2=0.34$; adjusted $R^2=0.30$. Exact P-values: Log(CMNV load), $P=0.000198$; Age, $P=0.000802$.

Supplementary Information

Supplementary Table 2_Risk Exposure Mode Questionnaire and PSQI Questionnaire

Risk Exposure Mode Questionnaire

Introduction: This questionnaire is designed to identify potential risk exposure related to animals and environmental factors. Please answer all questions accurately based on your experiences over the past two years.			
Response / Details			
Age: _____			
Date of onset: _____			
<i>Rate your sleep duration, difficulty falling asleep, frequency of dreams, and night-waking.</i>			
Score: _____ (0-21)			
Subjective assessment of spouse's sleep quality: _____			
Specific Details & Frequency			
Does your work involve breeding, processing, sampling, or transporting aquatic animals (fresh or frozen)?			
☐ Yes ☐ No			
If Yes: Specify frequency (times per week/month): _____			
Have you had severe viral exposure or a high number of exposure incidents in the 2 years prior to onset?			
☐ Yes ☐ No			
Are there aquatic processing factories or stalls near your home?			
☐ Yes ☐ No			
If Yes: Frequency of exposure: _____			
Does your specific environment involve handling fresh animal products?			
☐ Yes ☐ No			

If Yes: Frequency: _____		
Specific Details & Frequency		
Are family members involved in breeding, slaughtering, or transporting animals/aquatics?		
☐ Yes ☐ No		
Do you keep pets (dogs, cats, ornamental fish, shrimp, turtles, snakes, etc.)?		
☐ Yes ☐ No		
If Yes: Frequency of contact/water changes: _____		
Are family members exposed to susceptible environments or high-risk groups?		
☐ Yes ☐ No		
Are partners or close friends exposed to any risks mentioned in this form?		
☐ Yes ☐ No		
Specific Details & Frequency		
Do you handle/process aquatic animals or meat products while cooking?		
☐ Yes ☐ No		
If Yes: Have you been pricked or handled food with hand wounds? ☐ Yes ☐ No		
Frequency: _____		
Does a family member handle these products?		
☐ Yes ☐ No		
Do you consume raw/uncooked aquatic products, preserved seafood, or sauce products?		
☐ Yes ☐ No		
If Yes: Frequency: _____		

Do family members consume raw/fresh animal products?			
☐ Yes ☐ No			
Specific Details & Frequency			
Have you had close contact with aquatic animals or other animals?			
☐ Yes ☐ No			
Have you visited bathing places (public baths/pools)?			
☐ Yes ☐ No			
Have you sustained injuries or skin wounds? Specify the type of wound (e.g., pricks, bleeding, pain).			
Details: _____			
Have family members had similar contacts, injuries, or visits to bathing places?			
☐ Yes ☐ No			
Expert Note: Sex*: Biological sex. ①*: Fishery practitioners. “Fishery practitioners” refer to individuals engaged in aquaculture and fishing activities, including inland lake, coastal, and deep-sea fishing. ②*: Aquatic pet breeder. “Aquatic pet breeder” refers to individuals who engage in the feeding and breeding of aquatic pets for entertainment or commercial purposes. ③*: Aquatic transporters. “Aquatic transporters” refers to those who transport aquatic animals (including live or frozen animals). ④*: Full-time aquatic animal processors. “Full-time aquatic animal processors” refers to individuals who perform aquatic animal processing as their full-time job. ⑤*: Home-based aquatic animal handlers. “Home-based aquatic animal handlers” refers to individuals who perform aquatic animal processing for preparing family meals at home. ⑥*: Raw aquatic eaters. “Raw aquatic eaters” refers to individuals who eat raw aquaculture animal or raw products of aquaculture animal in daily life. ⑦*: Close contacts of susceptible environments. “Close contacts of susceptible environments” refers to individuals who have had occasional or frequent contact with susceptible environments. ⑧*: Close contacts of high-risk groups. “Close contacts of high-risk groups” refers to individuals who have had occasional or frequent contact with high-risk groups. Personal Sleep Quality (PSQI) see the next page.			

Pittsburgh Sleep Quality Index (PSQI) Questionnaire

Name: _____ Date: _____					
Instructions: The following questions relate to your usual sleep habits during the past month before the onset of the disease. Please answer all questions.					
1. During the past month, what time have you usually gone to bed at night? _____					
Item score	0	1	2	3	
2. During the past month, how long has it usually takes you to fall asleep each night?	≤ 15min	□16~30min	□31~60min	□≥ 60min	
3. During the past month, what time have you usually gotten up in the morning? _____					
4. During the past month, how many hours of actual sleep did you get at night? (This may be different than the number of hours you spent in bed.) _					
Item score	0	1	2	3	
5. During the past month, how often have you had trouble sleeping because you...	No	< 1 time/week	1-2 times/week	≥3 times/week	
a. Cannot get to sleep within 30 minutes	□	□	□	□	
b. Wake up in the middle of the night or early morning	□	□	□	□	
c. Have to get up to use the bathroom	□	□	□	□	
d. Cannot breathe comfortably	□	□	□	□	
e. Cough or snore loudly	□	□	□	□	
f. Feel too cold	□	□	□	□	
g. Feel too hot	□	□	□	□	
h. Have bad dreams	□	□	□	□	
i. Have pain	□	□	□	□	
j. Other reason(s), please describe: _____	□	□	□	□	
6. How would you rate your sleep quality overall?	□Very good	□Fairly good	□Fairly bad	□Very bad	
7. How often have you taken medicine to help you sleep	□ No	□ < 1 time per week	□ 1–2 times per week	□ ≥ 3 times/week	
8. In the past month, have you often felt sleepy?	□ No	□ < 1 time per week	□ 1–2 times per week	□ ≥ 3 times/week	
9. Have you felt lacking in energy to do things in the past month?	□ No	□ Occasionally	□ Sometimes	□ Frequently	
PSQI Scoring Method					
Component	Content	0 Points	1 Point	2 Points	3 Points
A. Subjective Sleep Quality	Score from Item	□ Very good	□ Fairly good	□ Fairly bad	□ Very bad

B. Sleep Latency	Total score of Items 2 and 5a	☐ 0 points	☐ 1–2 points	☐ 3–4 points	☐ 5–6 points
C. Sleep Duration	Score from Item 4	> 7h	☐ 6–7h (excluding 6h)	☐ 5–6h (including 6h)	< 5h
D. Habitual Sleep Efficiency	Calculated using Items 1, 3, and 4	> 85%	☐ 75–85% (excluding 75%)	☐ 65–75% (including 75%)	< 65%
E. Sleep Disturbances	Total score of Items 5b–5j	☐ 0 points	☐ 1–9 points	☐ 10–18 points	19–27 points
F. Use of Sleep Medication	Score from Item 7	☐ None	☐ < 1 time/week	☐ 1–2 times/week	☐ ≥ 3 times/week
G. Daytime Dysfunction	Total score of Items 8 and 9	☐ 0 points	☐ 1–2 points	☐ 3–4 points	5–6 points

Supplementary Information

Supplementary Table 3_Risk exposure mode questionnaire.

Num.	Question	Explanations of the question	Emphasis of the question details	Likely exposure mode
1	Basic information	Age, Sex*, occupation, the potential exposure time and the disease onset times	Pay attention to whether the occupation involves the breeding, processing, sampling of aquatic animals or animals and the processing of their products [fresh]; the potential viral exposure, the number of severe exposure, and exposure severity within 2 years prior to disease onset.	①*③*④*
2	Basic information of family members	Occupation of all family members [whether they are engaged in breeding, slaughtering, processing, and transportation of animals and aquatic animals full-time or occasionally]; whether the family keeps pets [including dogs, cats, ornamental fish, shrimp, turtles, snakes, etc.]	If the answer to the above questions in this entry is yes, Ask about the frequency of contact with aquatic animals or animals (feeding, changing water) (several times a week or a month)	⑦*⑧*
3	Personal work environment	The working and living environment, whether it involves the breeding, processing, sampling of animals and aquatic animals and the processing of their products [fresh];	If the answer to the above questions in this item is yes, ask them how often they have done or encountered these actions (several times a week or month)	①*③*④*
	Family member working environment			⑦*⑧*
4	Do the participants cook or not?	Does the person cook or not, whether he/she handle/process aquatic animals or animals during cooking	If the answer to the above questions in this item is yes, ask if they often or occasionally handle aquatic animals or animals and their meat products; whether they have been pricked; whether they have been involved in the above operations when there is a wound in the hand; the frequency of the above operations or encounters (several times a week or a month); the frequency of the pricked wounds, whether there is bleeding, and whether there is pain	⑤*⑦*⑧*
	Do the family member cook or not?			⑦*⑧*
5	Eating habits of the participant	Does the person like raw food, do he/she like raw aquatic animals or animals and their fresh products?	If the answer to the above questions in this item is yes, ask them what kind of fresh food they have used, whether they have eaten preserved aquatic products or sauce products; whether they have eaten uncooked aquatic products; the frequency of eating raw is weekly or several times a month; whether they are pricked or diarrhea when eating raw;	⑥*
	Eating habits of the family member			⑦*⑧*
6	Related experienced of the participants in 2 years	Has the person had close contact with aquatic animals or animals within 2 years, or within 2 years prior to disease onset of the disease, has the person been to a bathing place, has the person been injured, and what is the wound?	If the answer to the above questions in this item is yes, ask the frequency of the above experience or encounter (several times a week or month)	②*⑦*⑧*
	Related experienced of the family member in 2 years			⑦*⑧*
7	Living environment	Are there possible risk sources such as aquatic animals or animal processing factories and processing stalls around the living and living environment?	If the answer to the above questions in this item is yes, ask how often they are exposed to the above risk sources (several times a week or month)	⑦*⑧*
8	Sleep quality of the participant	Scoring according to the Pittsburgh Sleep Quality Index (PSQI) questionnaire	Focus on the duration of sleep, whether it is difficult to fall asleep, whether it has many dreams, whether it is easy to wake up, whether it is up at night, and my evaluation of the quality of sleep.	/
	Sleep quality of the spouse			/
9	Others	Whether partners, friends, etc. in intimate contact are exposed to the risks described in items 1-8	When no risk exposure route can be found in items 1-8, focus on whether the partners, friends and other people with whom they have close contact are exposed to the virus.	⑦*⑧*

Sex*: Biological sex.

- ①*: Fishery practitioners. “Fishery practitioners” refer to individuals engaged in aquaculture and fishing activities, including inland lake, coastal, and deep-sea fishing.
- ②*: Aquatic pet breeder. “Aquatic pet breeder” refers to individuals who engage in the feeding and breeding of aquatic pets for entertainment or commercial purposes.
- ③*: Aquatic transporters. “Aquatic transporters” refers to those who transport aquatic animals (including live or frozen animals).
- ④*: Full-time aquatic animal processors. “Full-time aquatic animal processors” refers to individuals who perform aquatic animal processing as their full-time job.
- ⑤*: Home-based aquatic animal handlers. “Home-based aquatic animal handlers” refers to individuals who perform aquatic animal processing for preparing family meals at home.
- ⑥*: Raw aquatic eaters. “Raw aquatic eaters” refers to individuals who eat raw aquaculture animal or raw products of aquaculture animal in daily life.
- ⑦*: Close contacts of susceptible environments. “Close contacts of susceptible environments” refers to individuals who have had occasional or frequent contact with susceptible environments.
- ⑧*: Close contacts of high-risk groups. “Close contacts of high-risk groups” refers to individuals who have had occasional or frequent contact with high-risk groups.

Supplementary Information

Supplementary Table 4_Classes of CMNV exposure severity.

Exposure severity of CMNV								
Classes	Severity of being injured when processing aquaculture animal			Severity of exposure when eating raw aquatic animals		Severity of exposure when contacting with at-risk population/ aquatic animals		Severity of exposure when contacting at-risk environment
+++++	Bleeding	Sharp pain	Certain of being injured	Eating raw with frequency of multiple daily servings	Diarrhea after eating raw	Occupational exposure	Eat and live together with at-risk population daily	Contact at-risk environment multiple times a day
++++	/	Pain	Remember being injured	Multiple weekly servings	Stomached pain after eating raw	Part-time job exposure	Eat and live together with at-risk population weekly	Contact at-risk environment daily
+++	/	/	Remember being injured	Multiple monthly servings	Uncomfortable after eating raw	Multiple weekly exposure	Eat and live together with at-risk population monthly	Contact at-risk environment weekly
++	/	/	May have been injured	Multiple yearly servings	/	Multiple monthly exposure	Eat and live together with at-risk population yearly	Contact at-risk environment monthly
+	/	/	Unlikely to have been injured	Once every few years	/	Multiple yearly exposure	Rarely eat and live with at-risk population	Contact at-risk environment yearly
0	/	/	Certain of no injury	Did not eat	/	Sure of no contact	Sure of no contact	Sure of no contact

Supplementary Information

Supplementary Table 5_ Detection results of covert mortality nodavirus (CMNV) in aquaculture and wild species collected from different geographic locations in the world.

Sampling area	Subphylum	Family	Species	Common name	Taqman-qPCR (P/T)	ISH (P/T)	RT-PCR (P/T)	RT-LAMP (P/T)	Remarks
Commercial markets in China	Vertebrata	Mugilidae	<i>Planiliza haematocheila</i>	Redlip mullet	+ (11/15)				Wild
		Pleuronectidae	<i>Hippoglossoides platessoides</i>	Flathead flounder	+ (2/6)				Wild
		Sciaenidae	<i>Larimichthys polyactis</i>	Little yellow croaker	+ (5/8)	+ (5/8)			Wild
		Cynoglossidae	<i>Cynoglossus semilaevis</i>	Half-smooth tongue sole	+ (4/5)				Wild
		Stromateidae	<i>Pampus chinensis</i>	Chinese pomfret	- (0/2)				Wild
		Triglidae	<i>Chelidonichthys spinosus</i>	Pacific red gumard	- (0/2)				Wild
		Serranidae	<i>Epinephelus fuscoguttatus</i>	Tiger grouper	- (0/5)				Wild
		Anguillidae	<i>Anguilla japonica</i>	Freshwater eel	+ (5/7)				Wild
		Hexagrammidae	<i>Hexagrammos otakii</i>	Fat greenling	+ (3/4)				Farmed
		Paralichthyidae	<i>Paralichthys olivaceus</i>	Japanese flounder	+ (2/3)	+ (2/3)			Farmed
		Cichlidae	<i>Oreochromis niloticus</i>	Tilapia	- (0/1)				Farmed
		Lateolabracidae	<i>Lateolabrax japonicus</i>	Japanese sea bass	+ (1/2)				Farmed
		Cyprinidae	<i>Carassius auratus</i>	Goldfish	+ (1/1)				Farmed
		Cyprinidae	<i>Hypophthalmichthys nobilis</i>	Bighead carp	+ (1/2)				Farmed
		Cyprinidae	<i>Ctenopharyngodon idella</i>	Grass carp	- (0/1)				Farmed
	Crustacea	Palaemonidae	<i>Exopalaemon carinicauda</i>	Ridgetail white prawn	+ (1/6)	+ (1/6)			Wild
		Penaeidae	<i>Trachypenaeus curvirostris</i>	Southern rough shrimp	+ (7/13)				Wild
		Penaeidae	<i>Penaeus chinensis</i>	Oriental shrimp	- (0/14)				Farmed
		Penaeidae	<i>Penaeus monodon</i>	Black tiger shrimp	- (0/8)				Farmed
		Penaeidae	<i>Penaeus vannamei</i>	White-leg shrimp	+ (3/9)	+ (3/4)			Farmed
		Squillidae	<i>Oratosquilla oratoria</i>	Edible mantis shrimp	+ (2/4)				Wild
		Penaeidae	<i>Metapenaeus ensis</i>	Sword shrimp	+ (2/2)				Wild
		Penaeidae	<i>Penaeus japonicus</i>	Japanese tiger shrimp	+ (1/1)				Wild
		Palaemonidae	<i>Macrobrachium rosenbergii</i>	Giant river prawn	+ (11/67)	+ (12/62)			Farmed
		Portunidae	<i>Charybdis japonica</i>	Japenese stone crab	+ (5/5)	+ (2/3)			Wild
		Portunidae	<i>Portunus pelagicus</i>	Blue swimming crab	- (0/1)				Wild

		<i>Varunidae</i>	<i>Eriocheir sinensis</i>	Chinese mitten crab	+ (2/4)				Wild
		<i>Portunidae</i>	<i>Portunus trituberculatus</i>	Swimming crab	+ (1/3)	+ (1/3)			Farmed
	Mollusca	<i>Ostreidae</i>	<i>Magallana gigas</i>	Pacific oyster	+ (11/12)	+ (11/12)			Farmed
		<i>Pectinidae</i>	<i>Chlamys farreri</i>	Chlamys farreri	+ (11/11)	+ (7/11)			Farmed
		<i>Arcidae</i>	<i>Scapharca broughtonii</i>	Burnt-end Ark	+ (5/6)				Farmed
		<i>Veneridae</i>	<i>Ruditapes philippinarum</i>	Short necked clam	+ (11/12)				Farmed
		<i>Haliotidae</i>	<i>Haliotis discus</i>	Edo abalone	- (1/5)				Farmed
		<i>Vesicomyidae</i>	<i>Sinonovacula constricta</i>	Chinese razor clam	- (0/5)				Farmed
		<i>Solenidae</i>	<i>Solen strictus</i>	Gould's razor shell	+ (4/8)				Farmed
		<i>Turritellidae</i>	<i>Turritella terebra</i>	Turritella terebra Linnaeus	+ (2/5)				Wild
		<i>Turbinidae</i>	<i>Turbo marmoratus</i>	Tapestry turban	- (0/5)				Wild
		<i>Mytilidae</i>	<i>Mytilus edulis</i>	Blue mussel	+ (8/8)	+ (8/8)			Wild
		<i>Veneridae</i>	<i>Meretrix meretrix</i>	Asiatic hard clam	+ (3/5)	+ (3/5)			Farmed
		<i>Arcidae</i>	<i>Scapharca subcrenata</i>	Blood ark shell	+ (4/8)				Wild
		<i>Melongenidae</i>	<i>Busycon canaliculatum</i>	Sea snail	+ (1/3)				Wild
		<i>Babyloniidae</i>	<i>Babylonia areolata</i>	Spotted babylon	- (0/3)				Wild
		<i>Veneridae</i>	<i>Paphia undulata</i>	Undulating venus	- (0/3)				Wild
		<i>Mactridae</i>	<i>Mactra veneriformis</i>	White clam mactra	- (0/3)				Wild
		<i>Cypraeidae</i>	<i>Monetaria moneta</i>	Money cowrie	+ (1/3)				Wild
		<i>Pinnidae</i>	<i>Pinna muricata</i>	Rude pen shell	+ (1/2)				Wild
		<i>Pectinidae</i>	<i>Argopecten irradians</i>	Atlantic bay scallop	+ (1/2)				Farmed
		<i>Octopodidae</i>	<i>Octopus ocellatus</i>	Webfoot octopus	+ (4/8)	+ (1/3)			Wild
		<i>Loliginidae</i>	<i>Uroteuthis chinensis</i>	Chinese squid	+ (2/5)				Wild
		<i>Loliginidae</i>	<i>Loliolus japonica</i>	Japanese squid	+ (2/4)				Wild
	Echiura	<i>Urechidae</i>	<i>Urechis unicinctus</i>	Innkeeper worm	+ (6/22)	+ (3/3)			Wild
	Medusozoa	<i>Ulmaridae</i>	<i>Aurelia aurita</i>	Moon jellyfish		+ (2/2)			Wild
Asia	Vertebrata	<i>Serranidae</i>	<i>Epinephelus spp.</i>	Grouper	+ (1/3)	+ (2/3)	- (0/1)		Farmed
		<i>Sciaenidae</i>	<i>Sciaenops ocellatus</i>	Red drum	- (0/1)	+ (1/1)			Farmed
		<i>Latidae</i>	<i>Lates calcarifer</i>	Asian seabass	+ (3/8)	+ (1/8)			Farmed
		<i>Lutjanidae</i>	<i>Lutjanus erythropterus</i>	Snapper	+ (2/2)	+ (2/2)			Farmed
		<i>Serranidae</i>	<i>Epinephelus fuscoguttatus</i> × <i>Epinephelus lanceolatus</i>	Pearl gentian grouper	+ (1/10)	+ (1/10)			Farmed
		<i>Carangidae</i>	<i>Trachinotus ovatus</i>	Golden pompano	+ (3/10)				Farmed

		<i>Ictaluridae</i>	<i>Ictalurus punctatus</i>	Channel catfish			- (0/1)		Farmed
		<i>Pangasiidae</i>	<i>Pangasianodon hypophthalmus</i>	Basa			- (0/1)		Wild
		<i>Scophthalmidae</i>	<i>Scophthalmus maximus</i>	Turbot		+ (2/2)		- (0/2)	Farmed
		<i>Cichlidae</i>	<i>Oreochromis niloticus</i>	Tilapia			- (0/6)		Wild
		<i>Siganidae</i>	<i>Siganus canaliculatus</i>	Mottled spinefoot			- (0/1)		Wild
		<i>Poeciliidae</i>	<i>Gambusia affinis</i>	Mosquitofish				- (0/2)	Wild
		<i>Cyprinidae</i>	<i>Danio rerio</i>	Zebrafish		+ (3/3)			Farmed
		<i>Sparidae</i>	<i>Sparus macrocephalus</i>	Blackhead seabream		+ (5/5)			Farmed
	Crustacea	<i>Penaeidae</i>	<i>Penaeus japonicus</i>	Kuruma shrimp	+ (3/5)	+ (7/7)			Farmed
							- (0/1)		/
		<i>Penaeidae</i>	<i>Penaeus chinensis</i>	Chinese white shrimp			- (0/2)		Farmed
		<i>Penaeidae</i>	<i>Penaeus monodon</i>	Asian tiger shrimp			- (0/1)		Farmed
		<i>Penaeidae</i>	<i>Caridina cantonensis</i>	Bee shrimp			- (0/3)		/
		<i>Cambaridae</i>	<i>Procambarus clarkii</i>	Crayfish			- (0/1)	- (0/1)	Farmed
							- (0/2)	- (0/27)	/
		<i>Parastacidae</i>	<i>Cherax quadricarinatus</i>	Blue lobster			- (0/2)		Farmed
		<i>Palaemonidae</i>	<i>Macrobrachium rosenbergii</i>	Giant river prawn	+ (1/2)		- (0/2)		Farmed
					+ (0/35)				/
		<i>Portunidae</i>	<i>Portunus trituberculatus</i>	Swimming crab	+ (2/3)	+ (3/3)	+ (1/3)		Farmed
		<i>Penaeidae</i>	<i>Penaeus vannamei</i>	White-leg shrimp	+ (14/46)	+ (12/29)	+ (14/24)	+ (6/25)	Farmed
		<i>Artemiidae</i>	<i>Artemia salina</i>	Brine shrimp	+ (1/22)		+ (1/1)		/
		<i>Balanidae</i>	<i>Balanus spp.</i>	Barnacles		+ (1/4)			Wild
	Echinozoa	<i>Stichopodidae</i>	<i>Apostichopus japonicus</i>	Sea cucumber	+ (3/5)	+ (3/5)			Farmed
	Hirudinea	<i>Piscicolidae</i>	<i>Piscicola geometra</i>	Fish leech			- (0/1)		Wild
	Mollusca	<i>Pomatiopsidae</i>	<i>Oncomelania hupensis</i>	Oncomelania snail		+ (2/4)	- (0/2)		Wild
		<i>Melongenidae</i>	<i>Busycon canaliculatum</i>	Sea snail			- (0/1)		Wild
	Others	/	/	/	+ (4/131)	+ (4/15)			/
Africa*	Crustacea	<i>Penaeidae</i>	<i>Penaeus vannamei</i>	White-leg shrimp	+ (4/6)				Farmed
	Vertebrata	<i>Sparidae</i>	<i>Sparus aurata</i>	Sea bream	+ (1/36)				Farmed
		<i>Moronidae</i>	<i>Morone chrysops</i>	white bass	+ (6/12)				Farmed
America	Crustacea	<i>Paguridae</i>	<i>Paguridae</i>	Hermit crab	+ (1/1)**				Wild
		<i>Penaeidae</i>	<i>Penaeus vannamei</i>	White-leg shrimp	+ (4/5)**				Farmed

		<i>Penaeidae</i>	<i>Penaeus vannamei</i>	White-leg shrimp		+ (15/116)***		Farmed
Antarctica	Crustacea	<i>Euphausiidae</i>	<i>Euphausia superba</i>	Antarctic krill	+ (39/110)****	+ (9/28)	+ (39/110)	Wild

Note: 1. Only samples with identified species are shown in this table. 2. The symbols “+” and “-” indicate the CMNV-positive and CMNV-negative test results, respectively; “/” means not done. 3. P/T represents the number of CMNV positive samples divided by the total number of samples. 4. The samples from Asia were collected from China, Malaysia, Indonesia, and Thailand. *. The samples were collected from twelve fish and shrimp farms located in Egypt and Tunisia. **. The samples were collected from the export brood stock of *Litopenaeus vannamei* (including one crab sample) originated from Ecuador. ***. The results indicated by *** were reported by Intriago et al., (2024)^[69] (<https://doi.org/10.1016/j.aqrep.2024.102092>). ****. The results indicated by **** were reported by Xu et al., (2025)^[17]. This study calculated the CMNV detection results of 639 samples. Among them, 523 were biological samples collected by ourselves. Among these 523 samples, 110 Antarctic krill samples, which had been reported by Xu et al. (2025), were cited again in this study. The remaining 116 samples were from the report of Intriago et al. (2024). 5. The liver, and kidney tissues of each fish, or the cephalothorax of crustaceans, were divided equally into two aliquots along the longitudinal axis. One of the aliquots was preserved in 4% paraformaldehyde (4% PFA) solution (Sinopharm, Beijing, China). The second aliquot was then divided into two parts and preserved in RNastore solution (Tiangen, Beijing, China) and 2.5% glutaraldehyde solution (Sinopharm, Beijing, China), respectively. The remaining part of each individual was homogenized and smeared onto Whatman FTA Elute cards (GE Healthcare Life Sciences, Marlborough, MA, USA). Each FTA Elute card was air dried separately for 30 minutes, then placed in an individual plastic bag, and shipped at room temperature.