# WOAH Reference Laboratory Reports Activities 2022

## Activities in 2022

### This report has been submitted : 8 mars 2023 11:39

## Laboratory Information

| | |
|---|---|
| **Name of disease (or topic) for which you are a designated WOAH Reference Laboratory:** | Infection à Bonamia exitiosa, Bonamia ostreae |
| **Address of laboratory:** | Adaptation et Santé des Invertébrés Marins (ASIM) Ifremer 17390 La Tremblade FRANCE |
| **Tel.:** | 33546762610 |
| **E-mail address:** | iarzul@ifremer.fr |
| **Website:** | http://www.eurl-mollusc.eu/ https://asim.ifremer.fr/ |
| **Name (including Title) of Head of Laboratory (Responsible Official):** | Dr Isabelle Arzul (Cadre de recherche et responsable de l'unité) |
| **Name (including Title and Position) of WOAH Reference Expert:** | Dr Isabelle Arzul (Cadre de recherche et responsable de l'unité) |
| **Which of the following defines your laboratory?<br>Check all that apply:** | EPIC |

## 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 |
| 0 | Non | 0 | 0 |
| Direct diagnostic tests | | Nationally | Internationally |
| Histologie | Oui | 268 | 19 |
| Cytologie | Oui | 33 | 0 |
| PCR conventionnelle | Oui | 0 | |

| | | | |
|---|---|---|---|
| | | | 0 |
| PCR en temps réel Multiplex 1 | Non | 186 | 0 |
| PCR en temps réel Multiplex 2 | Non | 1543 | 0 |
| Hybridation in situ | Oui | 103 | 2 |
| Séquençage | Oui | 0 | 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?

Yes

| TYPE OF REAGENT AVAILABLE | RELATED DIAGNOSTIC TEST | PRODUCED/ PROVIDE | AMOUNT SUPPLIED NATIONALLY (ML, MG) | AMOUNT SUPPLIED INTERNATIONALLY (ML, MG) | NO. OF RECIPIENT WOAH MEMBER COUNTRIES | COUNTRY OF RECIPIENTS |
|---|---|---|---|---|---|---|
| Lames histologiques | Histologie | 0 | 0 | 6 | 2 | Asia and Pacific Europe |
| Blocs de paraffine | Histologie | 0 | 0 | 0 | 0 | |
| Lames cytologiques | Cytologie | 0 | 0 | 0 | 0 | |
| Tissus fixés en éthanol | PCR, PCR en temps réel, séquençage | 0 | 0 | 5 | 1 | Europe |
| Suspensions d'ADN génomique | PCR, PCR en temps réel, séquençage | 0 | 0 | 0 | 0 | |
| Suspensions d'ADN plasmidique | PCR, PCR en temps réel | 0 | 0 | 12 | 4 | Asia and Pacific Europe |

4. Did your laboratory produce vaccines?

Not applicable

5. Did your laboratory supply vaccines to WOAH Members?

Not applicable

# TOR3: NEW PROCEDURES

6. Did your laboratory develop new diagnostic methods for the designated pathogen or disease?

Yes

7. Did your laboratory validate diagnostic methods according to WOAH Standards for the designated pathogen or disease?

Yes

| NAME OF THE NEW TEST OR | |
|---|---|

| DIAGNOSTIC METHOD DEVELOPED | DESCRIPTION AND REFERENCES (PUBLICATION, WEBSITE, ETC.) |
|---|---|
| Bonamia ostreae and Bonamia exitiosa detection by Taqman® Real Time Polymerase Chain Reaction | https://www.eurl-mollusc.eu/content/download/137231/file/B.ostreae%26B.exitiosa%20_TaqmanRealTimePCR_editionN%C2%B01.pdf |

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?

Yes

| NAME OF WOAH MEMBER COUNTRY SEEKING ASSISTANCE | DATE | WHICH DIAGNOSTIC TEST USED | NO. SAMPLES RECEIVED FOR PROVISION OF DIAGNOSTIC SUPPORT | NO. SAMPLES RECEIVED FOR PROVISION OF CONFIRMATORY DIAGNOSES |
|---|---|---|---|---|
| THE NETHERLANDS | 2022-07-08 | Histologie | 15 | 0 |
| FRENCH POLYNESIA | 2022-07-26 | Histologie | 0 | 1 |
| CANADA | 2022-12-12 | Histologie et hybridation in situ | 0 | 2 |
| GERMANY | 2022-08-22 | Histologie | 1 | 0 |

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 |
|---|---|---|
| DENMARK | Améliorer le diagnostic de Bonamia ostreae et Bonamia exitiosa en PCR | Envoi de recommandation concernant le choix des essais PCR à accréditer pour le diagnostic de Bonamia ostreae et B. exitiosa |
| BELGIUM | Améliorer le diagnostic de Bonamia ostreae et Bonamia exitiosa en PCR | Envoi de recommandation concernant l'utilisation d'ADN plasmidique comme contrôle positif pour les analyses PCR pour le diagnostic de Bonamia ostreae et B. exitiosa |
| IRELAND | Améliorer le diagnostic de Bonamia ostreae et Bonamia exitiosa en PCR | Fourniture de séquences pour la production de contrôles positifs pour PCR en temps réel |
| | Améliorer le diagnostic de | |

| | | |
|---|---|---|
| IRELAND | Bonamia ostreae et Bonamia exitiosa | Conseil concernant la démarche de confirmation par séquençage |

# TOR5: COLLABORATIVE SCIENTIFIC AND TECHNICAL STUDIES

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

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: |
|---|
| Dans le cadre des activités du Laboratoire de Référence de l'Union Européenne pour les maladies des mollusques, notre laboratoire collecte annuellement les données épidémiologiques concernant les maladies des mollusques à l'échelle européenne |

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: |
|---|
| Dans le cadre des activités du Laboratoire de Référence de l'Union Européenne pour les maladies des mollusques, notre laboratoire collecte annuellement les données épidémiologiques concernant les maladies des mollusques à l'échelle européenne |

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:

*11*

*Arzul Isabelle, Garcia Celine, Chollet Bruno, Serpin Delphine, Lupo Coralie, Noyer Mathilde, Tourbiez Delphine, Berland Chloe, Degremont Lionel, Travers Marie-Agnes (2022). First characterization of the parasite Haplosporidium costale in France and development of a real-time PCR assay for its rapid detection in the Pacific oyster, Crassostrea gigas . Transboundary And Emerging Diseases , 69(5), E2041-E2058 . https://doi.org/10.1111/tbed.14541*

*Chevignon Germain, Dotto-Maurel Aurelie, Serpin Delphine, Chollet Bruno, Arzul Isabelle (2022). De Novo Transcriptome Assembly and Analysis of the Flat Oyster Pathogenic Protozoa Bonamia Ostreae . Frontiers In Cellular And Infection Microbiology , 12, 921136 (14p.) https://doi.org/10.3389/fcimb.2022.921136*

*Dégremont Lionel, Maurouard Elise, Jourdan Antoine, Lamy Jean-Baptiste, Boudry Pierre (2022). SNP-based parentage analyses over two successive generations demonstrates the feasibility of efficient production of inbred lines in the Pacific oyster (Crassostrea gigas) by self-fertilization of simultaneous hermaphrodites despite severe inbreeding depression . Aquaculture , 547, 737443 (5p.) . https://doi.org/10.1016/j.aquaculture.2021.737443*

*Delmotte Jean, Pelletier Camille, Morga Benjamin, Galinier Richard, Petton Bruno, Lamy Jean-Baptiste, Kaltz Oliver, Avarre Jean-Christophe, Jacquot Maude, Montagnani Caroline, Escoubas Jean Michel (2022). Genetic Diversity and Connectivity of the Ostreid Herpesvirus 1 Populations in France: A First Attempt to Phylogeographic Inference for a Marine Mollusc Disease . Virus Evolution , 8(1), veac039 (14p.) https://doi.org/10.1093/ve/veac039*

*Dotto-Maurel Aurelie, Pelletier Camille, Morga Benjamin, Jacquot Maude, Faury Nicole, Dégremont Lionel, Bereszczynki Maëlis, Delmotte Jean, Escoubas Jean-Michel, Chevignon Germain (2022). Evaluation of tangential flow filtration coupled to long-read sequencing for ostreid herpesvirus type 1 genome assembly . Microbial Genomics , 8(11), 000895 (17p.) https://doi.org/10.1099/mgen.0.000895 ,*

*Hammel Maurine, Simon Alexis, Arbiol Christine, Villalba Antonio, Burioli Erika Av, Pépin Jean-Francois, Lamy Jean-Baptiste, Benabdelmouna Abdellah, Bernard Ismael, Houssin Maryline, Charrière Guillaume, Destoumieux Garzon Delphine, Welch John J., Metzger Michael J, Bierne Nicolas (2022). Prevalence and polymorphism of a mussel transmissible cancer in Europe . Molecular Ecology , 31(3), 736-751 . https://doi.org/10.1111/mec.16052*

b) International conferences:

*4 conférences= 9 présentations*

*Arzul Isabelle (2022). Factors driving farmed bivalve diseases. 2nd International Ocean Health Symposium "Emerging Marine Diseases, Regulating Functions, and Governance Implications". 29-31 august 2022, Kiel, Germany.*

*Arzul Isabelle (2022). Manual for bivalve disease management and biosecurity. 2022 Annual Meeting of NRLs for Mollusc Diseases. 28-29 March 2022.*

*Arzul Isabelle, Lecadet Cyrielle, Person Pauline, Chollet Bruno, Leveque Etienne, Canier Lydie (2022). Using eDNA-based approach to investigate parasite life cycle: the example of Haplosporidium costale. ISEEMPD 2022 - International Symposium on Ecology and Evolution of Marine Parasites and Diseases. 15-18 November 2022.*

*Arzul Isabelle, Canier Lydie, Chollet Bruno, Serpin Delphine, Noyer Mathilde, Nadeau Aurelie, Garcia Celine (2022). Main European clam diseases. PANIC Kick off Meeting. 21 April 2022.*

*Canier Lydie, Arzul Isabelle (2022). Overview of main epidemiological facts in 2021 in Europe. 2022 Annual Meeting of National Reference Laboratories for Mollusc Diseases, online meeting, 28-29th of March 2022.*

*Canier Lydie, Arzul Isabelle (2022). Presentation of the diagnostic manual & results of the survey on the accreditation of diagnostic methods in NRLs. 2022 Annual Meeting of National Reference Laboratories for Mollusc Diseases, online meeting, 28-29th of March 2022.*

*Canier Lydie, Nadeau Aurelie (2022). 2021 Inter Laboratory Comparison test for the detection of Vibrio aestuarianus by PCR. 2022 Annual Meeting of National Reference Laboratories for Mollusc Diseases, online meeting, 28-29th of March 2022.*

*Charles Maud, Garcia Celine, Chollet Bruno, Nadeau Aurelie, Serpin Delphine, Pepin Jean-Francois, Houssin Maryline, Lupo Coralie (2022). Francisella halioticida. Retrospective study on mussel samples from national surveillance. 2022 Annual Meeting of National Reference Laboratories for Mollusc Diseases. 28-29th of March 2022, online meeting.*

*Garcia Celine, Mesnil Aurelie, Tourbiez Delphine, Degremont Lionel, Hocquet Juliette, Chollet Bruno, Serpin Delphine, Nadeau Aurelie, Noyer Mathilde, Girardin Frederic, Devreker David, Meirland Antoine, Ricard Morgane, Rocroy Mélanie, Travers Agnes (2022). Dynamics of Vibrio aestuarianus in cockles in wild beds of Hauts-de-France. Marine Parasites Symposium: workshop on micro-parasites of marine molluscs.*

c) National conferences:

*5 conférences = 8 présentations*
*Arzul Isabelle, Lecadet Cyrielle, Canier Lydie, Noel Cyril (2022). Diversité des protistes parasites des bivalves marins : ce que nous apportent les approches de métagénomique ciblée. Réunion annuelle de ROME.*

*Canier Lydie, Robe Emmanuel, Garcia Celine (2022). Bilan 2021 des activités de surveillance des maladies des mollusques marins (REPAMO) et transfert de la surveillance. Journée des laboratoires agréés et reconnus, 15 mars 2022.*

*Canier Lydie, Garcia Celine, Arzul Isabelle, Grizon James, Seugnet Jean-Luc, Lagarde Franck (2022). Formation préleveurs - Transfert du réseau Repamo. Formation transfert réseau Repamo, à distance, 26 & 28 avril 2022.*

*Garcia Celine (2022). Programme de travail 2022 du LNR. Journée des laboratoires agrées et reconnus pour les maladies des mollusques marins. 15 mars 2022.*

*Garcia Celine, Chollet Bruno, Serpin Delphine, Noyer Mathilde, Nadeau Aurelie, Canier Lydie, Arzul Isabelle (2022). Comparaisons interlaboratoires. Bilan 2021. Perspectives 2022. Journée des laboratoires agrées et reconnus pour les maladies des mollusques marins. 15 mars 2022.*

*Garcia Celine, Chollet Bruno, Serpin Delphine, Noyer Mathilde, Nadeau Aurelie, Tourbiez Delphine, Canier Lydie, Jacquot Maude, Chevignon Germain, Dotto-Maurel Aurelie, Schwerdtle Pascal, Faury Nicole, Pelletier Camille, Morga Benjamin, Travers Agnes, Mesnil Aurelie, Arzul Isabelle (2022). Laboratoire National de Référence des maladies des mollusques marins. Bilan 2021. Journée des laboratoires agrées et reconnus pour les maladies des mollusques marins. 15 mars 2022.*

*Garcia Celine, Mesnil Aurelie, Tourbiez Delphine, Degremont Lionel, Hocquet Juliette, Chollet Bruno, Serpin Delphine, Nadeau Aurelie, Noyer Mathilde, Girardin Frederic, Devreker David, Meirland Antoine, Ricard Morgane, Rocroy Mélanie, Travers Agnes (2022). Dynamique de la bactérie Vibrio aestuarianus chez les coques dans des gisements exploités des Hauts-de-France. Journée de restitution du projet Mocoprege. 8 septembre 2022.*

*Ruyssen Maria, Grillon-Gaborit Fabrice, Richard Marion, Montagnani Caroline, Morga Benjamin, Vidal Dupiol Jeremie, Cosseau Celine (2022). Table Ronde Recherche & Conchyliculture #3 2022 . Quelles solutions face aux pathogènes détectés dans l'environnement ? IFREMER- CRCM, Bouzigues, 2022, 10p. https://archimer.ifremer.fr/doc/00799/91080/*

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

*6*
*Manuel*
*Arzul Isabelle, Furones Dolors, Cheslett Deborah, Gennari Lorenzo, Delangle Estelle, Enez Florian, Lupo Coralie, Mortensen Stein, Pernet Fabrice, Peeler Edmund . Manual for bivalve disease management and biosecurity. H2020 VIVALDI Project - 44p. https://archimer.ifremer.fr/doc/00812/92369/*

*Rapports*
*Canier Lydie, Arzul Isabelle, Garcia Celine, Noyer Mathilde, Nadeau Aurelie, Serpin Delphine, Kergaravat Cedric (2022). Rapport de caractérisation et de validation d'une méthode. PCR en temps-réel Taqman® pour la détection et la discrimination des parasites Bonamia ostreae et Bonamia exitiosa chez les huitres. RBE/ASIM/LRUE & LNR 22-019.*
*Canier Lydie, Arzul Isabelle, Garcia Celine, Noyer Mathilde, Nadeau Aurelie, Serpin Delphine, Kergaravat Cedric (2022). Rapport de caractérisation et de validation d'une méthode. PCR en temps-réel pour la détection et le typage des parasites Marteilia refringens chez les huitres et les moules. RBE/ASIM/LRUE & LNR 22-018.*

*Sites internet*
*EU Reference Laboratory for diseases of molluscs*
*https://www.eurl-mollusc.eu/*

*Unité Adaptation et Santé des Invertébrés Marins*
*https://asim.ifremer.fr/*

*H2020 EU project VIVALDI*
*VIVALDI Project*
*http://www.vivaldi-project.eu*
*Video on the EU project VIVALDI*
*https://image.ifremer.fr/data/00640/75216/#29871*

# 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 : 3

b) Seminars : 2

c) Hands-on training courses: 1

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 |
|---|---|---|
| a | Royaume -Uni | 1 |
| a | Norvège | 2 |
| a | Polynésie française | 1 |
| c | Portugal | 1 |
| a | Côte d'Ivoire | 1 |
| b | (Belgium, Bulgaria, Croatia, Denmark, France, Germany, Greece, Iceland, Ireland, Italy, Lithuania, Montenegro, Norway, Poland, Portugal, Romania, Slovenia, Spain, Sweden, The Netherlands, Turkey) | 57 |
| b | 22 pays différents | 120 |

# TOR8: QUALITY ASSURANCE

18. Does your laboratory have a Quality Management System?

Yes

| Quality management system adopted | Certificate scan (PDF, JPG, PNG format) | |
|---|---|---|
| NF EN ISO/CEI 17043 (accréditation) | Attestation 1-6907_17043_2022_2025 | C__fakepath_Attestation 1-6907_17043_2022_2025 (5).pdf |
| NF EN ISO/IEC 17025 (accréditation) | | Attestation 1-2160_17025-2022-2024.pdf |
| ISO 9001 (certification) | | Certificat ISO 9001_2022_2024.pdf |

19. Is your quality management system accredited?

Yes

| Test for which your laboratory is accredited | Accreditation body |
|---|---|
| Histologie-Cytologie | COFRAC |
| Organisation des essais inter-laboratoires en histo-cytologie | COFRAC |

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

No

# 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?

Not applicable (only WOAH Reference Laboratory designated for the disease

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

Not applicable (Only WOAH Reference Laboratory designated for the disease)

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

Not applicable (Only WOAH Reference Laboratory designated for the disease)

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?

Not applicable (Only WOAH Reference Laboratory designated for the disease)

# 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?

Yes

| Purpose for inter-laboratory test comparisons1 | Role of your reference laboratory (organizer/participant) | No. participating laboratories | Region(s) of participating WOAH Member Countries |
|---|---|---|---|
| Tester la compétence des laboratoires pour la détection en histologie de certaines maladies des mollusques marins dont les infections à Bonamia sp. | Organisateur | 2 | Europe |
| Tester la compétence des laboratoires pour la détection en histologie de certaines maladies des mollusques marins dont les infections à | Organisateur | 20 | Europe |

Bonamia sp.

# TOR12: EXPERT CONSULTANTS

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

Yes

| KIND OF CONSULTANCY | Location | SUBJECT (FACULTATIVE) |
|---|---|---|
| Animation et participation à un groupe de travail | On Line (30 May-3 June) | ad hoc Group on Susceptibility of mollusc species to infection with OIE listed diseases |
| Animation et participation à un groupe de travail | Paris (29 November-1 December) | ad hoc Group on Susceptibility of mollusc species to infection with OIE listed diseases |

29. Additional comments regarding your report:

No