

OIE Reference Laboratory Reports Activities

Activities in 2021

This report has been submitted : 2022-01-28 11:52:45

| | |
|--|---|
| Name of disease (or topic) for which you are a designated OIE Reference Laboratory: | Viral encephalopathy and retinopathy |
| Address of laboratory: | OIE Reference Laboratory for Viral Encephalopathy and Retinopathy of Marine Fish, Fish virology Dep., Istituto Zooprofilattico Sperimentale delle Venezie (IZSVe) Viale dell'Università, 10 35020 Legnaro (Padova), Italy |
| Tel.: | +39-049 808 43 88 |
| Fax: | +39-049 808 43 60 |
| E-mail address: | atoffan@izsvenezie.it |
| Website: | |
| Name (including Title) of Head of Laboratory (Responsible Official): | Calogero Terregino, Head of the EU/National Reference Laboratory for AI/NDV. Director of the Research and Development Department/acting Director of the Specialized Virology and Experimental Research Unit (IZSVe) |
| Name (including Title and Position) of OIE Reference Expert: | Anna Toffan DVM PhD, Head of Fish virology Dep. |
| Which of the following defines your laboratory? Check all that apply: | Governmental |

ToR 1: To use, promote and disseminate diagnostic methods validated according to OIE Standards

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 OIE Manual (Yes/No) | Total number of test performed last year | |
|---|----------------------------------|--|-----------------|
| | | Nationally | Internationally |
| Indirect diagnostic tests | | | |
| Seroneutralization | No | 0 | 0 |
| ELISA | No | 183 | 704 |
| Direct diagnostic tests | | | |
| Cell Culture | Yes | 1 | 8 |
| Real-time RT-PCR(rRT-PCR) | Yes | 247 | 904 |
| Immunohistochemistry (IHC) | Yes | 0 | 0 |
| Molecular characterization (RT-PCR and sequencing analysis) | Yes | 2 | 8 |

**ToR 2: To develop reference material in accordance with OIE requirements, and implement and promote the application of OIE Standards.
To store and distribute to national laboratories biological reference products and any other reagents used in the diagnosis and control of the designated pathogens or disease.**

2. Did your laboratory produce or supply imported standard reference reagents officially recognised by the OIE?

No

3. Did your laboratory supply standard reference reagents (non OIE-approved) and/or other diagnostic reagents to OIE Member Countries?

Yes

| Type of reagent available | Related diagnostic test | Produced/ provide | Amount supplied nationally (ml, mg) | Amount supplied internationally (ml, mg) | No. of recipient OIE Member Countries | Region of recipients |
|---|-------------------------|-------------------|-------------------------------------|--|---------------------------------------|---|
| Live betanodavirus (reference strains) | RT-PCR rRT-PCR | Stored | 0 ml | 40 ml | 2 | <input type="checkbox"/> Africa <input type="checkbox"/> Americas <input type="checkbox"/> Asia and Pacific <input checked="" type="checkbox"/> Europe <input type="checkbox"/> Middle East |
| inactivated betanodavirus (reference strains) | ELISA | Stored | 0 ml | 1,5 ml | 1 | <input checked="" type="checkbox"/> Africa <input type="checkbox"/> Americas <input type="checkbox"/> Asia and Pacific <input type="checkbox"/> Europe <input type="checkbox"/> Middle East |
| Rabbit Hyper-Immune serum antibetanodavirus (reference strains) | SN ELISA IHC | Stored | 0,5 ml | 5 ml | 1 | <input type="checkbox"/> Africa <input type="checkbox"/> Americas <input type="checkbox"/> Asia and Pacific <input checked="" type="checkbox"/> Europe <input type="checkbox"/> Middle East |
| Rabbit Hyper-Immune serum Anti sea bass IgM | SN ELISA IHC | Stored | 0 ml | 0,04 ml | 1 | <input checked="" type="checkbox"/> Africa <input type="checkbox"/> Americas <input type="checkbox"/> Asia and Pacific <input type="checkbox"/> Europe <input type="checkbox"/> Middle East |
| Positive Sea Bass serum | SN ELISA | Stored | 0 ml | 6 x 0,5 ml | 1 | <input checked="" type="checkbox"/> Africa <input type="checkbox"/> Americas <input type="checkbox"/> Asia and Pacific <input type="checkbox"/> Europe <input type="checkbox"/> Middle East |
| Positive Sea Bass serum | SN ELISA | Stored | 0 ml | 6 x 0,5 ml | 1 | <input checked="" type="checkbox"/> Africa <input type="checkbox"/> Americas <input type="checkbox"/> Asia and Pacific <input type="checkbox"/> Europe <input type="checkbox"/> Middle East |

4. Did your laboratory produce vaccines?

No

5. Did your laboratory supply vaccines to OIE Member Countries?

No

ToR 3: To develop, standardise and validate, according to OIE Standards, new procedures for diagnosis and control of the designated pathogens or diseases

6. Did your laboratory develop new diagnostic methods validated according to OIE Standards for the designated pathogen or disease?

No

7. Did your laboratory develop new vaccines according to OIE Standards for the designated pathogen or disease?

No

ToR 4: To provide diagnostic testing facilities, and, where appropriate, scientific and technical advice on disease control measures to OIE Member Countries

8. Did your laboratory carry out diagnostic testing for other OIE Member Countries?

Yes

| Name of OIE Member Country seeking assistance | Date (month) | No. samples received for provision of diagnostic support | No. samples received for provision of confirmatory diagnoses |
|---|----------------------|--|--|
| SPAIN | January - December | 774 | 1 |
| FRANCE | January - December | 688 | 0 |
| TUNISIA | January - March | 43 | 1 |
| THE NETHERLANDS | February - September | 14 | 0 |
| CROATIA | July - November | 9 | 0 |
| CYPRUS | January - December | 26 | 3 |
| TURKEY | January | 2 | 1 |
| MOZAMBIQUE | February | 15 | 0 |
| PORTUGAL | February | 2 | 1 |
| SAUDI ARABIA | February | 1 | 1 |
| MALTA | May - September | 50 | 0 |

9. Did your laboratory provide expert advice in technical consultancies on the request of an OIE Member Country?

Yes

| Name of the OIE Member Country receiving a technical consultancy | Purpose | How the advice was provided |
|--|--|--|
| SPAIN | Diagnosis and control of VER | Remote assistance and training |
| SPAIN | To write a manuscript on management of VNN (submitted) | Document writing |
| FRANCE | Diagnosis and control of VER | Remote assistance |
| CYPRUS | Diagnosis and control of VER and other fish diseases | Remote assistance |
| TUNISIA | Development of an ELISA assay | Provision of standard reagents and remote assistance |
| MOZAMBIQUE | Diagnosis and control of VER in tilapia | Diagnostic support and remote assistance |
| MALTA | Diagnosis and control of VER | Diagnostic support and remote assistance |
| THE NETHERLANDS | Development of ELISA assay | Provision of standard reagents and remote assistance |

ToR 5: To carry out and/or coordinate scientific and technical studies in collaboration with other laboratories, centres or organisations

10. Did your laboratory participate in international scientific studies in collaboration with OIE Member Countries other than the own?

Yes

| Title of the study | Duration | Purpose of the study | Partners (Institutions) | OIE Member Countries involved other than your country |
|--------------------|----------|---|--|--|
| VetBioNet | 5 years | Veterinary Biocontained facility Network for excellence in animal infectiology research and experimentation | <p>www.vetbionet.eu/consortium/ 1. Institut National de la Recherche Agronomique (France) 2. Stichting Dienst Landbouwkundig Onderzoek (Netherlands) 3. Friedrich Loeffler Institut (Germany) 4. The Pirbright Institute LBG (UK) 5. The Secretary of State for Environment, Food and Rural Affairs (UK) 6. Moredun Research Institute (UK) 7. Instituto Nacional de Investigacion y Tecnologia Agraria y Alimentaria (Spain) 8. Institut De Recerca I Tecnologia Agroalimentaries (Spain) 9. Eidgenoessisches Departement Des Innern (Switzerland) 10. Panstwowy Instytut Weterynaryjny - Panstwowy Instytut Badawczy (Poland) 11. Marine Scotland (UK) 12. Aarhus Universitet (Denmark) 13. Agence Nationale de Securite Sanitaire de L'alimentation, de L'environnement et du Travail (France) 14. The University of Edinburgh (UK) 15. Erasmus Universitair Medisch Centrum Rotterdam (Netherlands) 16. Istituto Zooprofilattico Sperimentale delle Venezie (Italy) 17. The University of Nottingham (UK) 18. University College Dublin, National University of Ireland (Ireland) 19. International Livestock Research Institute (Kenya) 20. Commonwealth Scientific and Industrial Research Organisation (Australia) 21. Federazione Europea di Zootecnica (Italy) 22. Inscreenex GmbH (Germany) 23. Leica Microsystems Cms GmbH Ernst-Leitz (Germany) 24. Noldus Information Technology Bv (Netherlands) And other 5 participants</p> | <p>AUSTRALIA DENMARK FRANCE GERMANY IRELAND ITALY KENYA POLAND SPAIN SWITZERLAND THE NETHERLANDS UNITED KINGDOM</p> |

| | | | | |
|---|---------|---|--|--|
| MedAID | 4 years | Mediterranean Aquaculture Integrated Development | <p>See also http://www.medaid-h2020.eu/ 1. Mediterranean Agronomic Institute of Zaragoza (Spain) 2. Institut de Recerca i Tecnologia Agroalimentaries (Spain) 3. NOFIMA AS (Norway) 4. Norwegian Veterinary Institute (Norway) 5. Universidad de Cantabria (Spain) 6. Institut Francais de Recherche pour l'exploitation de la mer (France) 7. Fundacion AZTI - AZTI Fundazioa (Spain) 8. Hellenic Centre for Marine Research (Greece) 9. Hrvatski Veterinarski Institut (Croatia) 10. Danmarks Tekniske Universitet (Denmark) 11. Aarhus Universitet (Denmark) 12. Kobenhavns Universitet (Denmark) 13. National Institute of Oceanography and Fisheries (Egypt) 14. Scea les poissons du soleil (France) 15. Selarl Vet'eau (France) 16. Avdelas Lamprakis (Greece) 17. Istituto Zooprofilattico Sperimentale Delle Venezie (Italy) 18. Alma Mater Studiorum - Universita di Bologna (Italy) 19. Nisea Societa Cooperativa (Italy) 20. Wageningen University (Netherlands) 21. Samfunns- og næringslivsforskning AS (Norway) 22. Centro de Ciencias do Mar do Algarve (Portugal) 23. Dibaq Diproteg SA (Spain) 24. Instituto Nacional de Investigaciony Tecnologia Agraria y Alimentaria OA MP (Spain) And other 9 partners</p> | <p>CROATIA DENMARK EGYPT FRANCE GREECE ITALY NORWAY PORTUGAL SPAIN THE NETHERLANDS TUNISIA TURKEY UNITED KINGDOM</p> |
| PathoGelTrap - New Blue Revolution through a pioneering pathogen-trapping technology based on bioselective hydrogel-forming proteins - H2020 EU Project (2020-2023) | 3 years | To innovate infectious disease management practices, providing industry with a technology capable of effectively removing specific pathogens directly from water. | <p>1. Smartwaterplanet, high-tech SME specialized in the development of technology solutions for the aquaculture sector. Madrid, Spain; 2. The Higher Council for Scientific Research (CSIC - State Agency for scientific research and technological development) Madrid, Spain; 3. University College Dublin (UCD) Ireland; 4. IZSVe, Italy; 5. IFPAN Institute of Physics, Polish Academy of Sciences, Warsaw, Poland. 6. LOMARTOV environmental engineering SME, specialized in supporting R&D, industrial and technology-based projects with a multidisciplinary approach, Valencia, Spain. https://pathogeltrap.eu/project/</p> | <p>IRELAND ITALY POLAND SPAIN</p> |

ToR 6: To collect, process, analyse, publish and disseminate epizootiological data relevant to the designated pathogens or diseases

11. Did your Laboratory collect epizootiological data relevant to international disease control?

Yes

| If the answer is yes, please provide details of the data collected: |
|--|
| Data repository of NNV strains/sequence collected during mortality events in groupers (<i>Epinephelus</i> spp.) in the Mediterranean basin; Data repository of reassortant RGNNV/SJNNV strains from NNV outbreaks in sea bream; Data collected from NNV outbreaks in sea bream that occurred in European hatchery; Data obtained from questionnaires sent in the frame of the proficiency test organized by the RL. |

12. Did your laboratory disseminate epizootiological data that had been processed and analysed?

No

| If the answer is no, please provide a brief explanation of the situation: |
|---|
| Through publication of peer reviewed articles at international level and supporting other laboratories in manuscript writing. |

13. What method of dissemination of information is most often used by your laboratory? (Indicate in the appropriate box the number by category)

a) Articles published in peer-reviewed journals: 6

- Barsøe, S., Toffan, A., Pascoli, F., Stratmann, A., Pretto, T., Marsella, A., Er-Rafik, M., Vendramin, N., Olesen, N.J., Sepúlveda, D., & Lorenzen, N. (2021). Long-term protection and serologic response of european sea bass vaccinated with a betanodavirus virus-like particle produced in *pichia pastoris*. 10.3390/vaccines9050447
- Faggion, S., Bertotto, D., Babbucci, M., Dalla Rovere, G., Franch, R., Bovolenta, M., Laureau, S., Pascoli, F., Toffan, A., Bargelloni, L., & Carnier, P. (2021). Resistance to viral nervous necrosis in European sea bass (*Dicentrarchus labrax* L.): heritability and relationships with body weight, cortisol concentration, and antibody titer. *Genetics, selection, evolution: GSE*, 53, 32-021-00625-2.
- Peruzza, L., Pascoli, F., Dalla Rovere, G., Franch, R., Ferraresso, S., Babbucci, M., Biasini, L., Abbadi, M., Panzarin, V., Toffan, A., & Bargelloni, L. (2021). Transcriptome analysis reveals a complex response to the RGNNV/SJNNV reassortant Nervous Necrosis Virus strain in sea bream larvae. *Fish & shellfish immunology*, doi: <https://doi.org/10.1016/j.fsi.2021.04.021>
- Savoca, S., Abbadi, M., Toffan, A., Salogni, C., Iaria, C., Capparucci, F., Quartesan, R., Alborali, G.L., Guarnera, S., Cangemi, G., & Marino, F. (2021). Betanodavirus infection associated with larval enteropathy as a cause of mortality in cultured gilthead sea bream (*Sparus aurata*, Linnaeus, 1758). *Aquaculture*, 541, 736844. doi: <https://doi.org/10.1016/j.aquaculture.2021.736844>
- Toffan, A., Biasini, L., Pretto, T., Abbadi, M., Buratin, A., Franch, R., Dalla Rovere, G., Panzarin, V.M., Marsella, A., Bargelloni, L., & Pascoli, F. (2021). Age dependency of RGNNV/SJNNV viral encephalo-retinopathy in Gilthead Sea Bream (*Sparus aurata*). *Aquaculture*, 539, 736605. doi: <https://doi.org/10.1016/j.aquaculture.2021.736605>
- Toffan, A., Buratin, A., Toson, M., Abbadi, M., Leardini, S., & Pascoli, F. (2021). Viral Encephalo-Retinopathy Interlaboratory Proficiency Test (VER-IPT): results from two years' experience. *Bulletin of the European Association of Fish Pathologists*, 41, 59-69.

b) International conferences: 3

- Abbadi, M., Pascoli, F., Dalla Rovere, G., Franch, R., Ferraresso, S., Babbucci, M., Biasini, L., Panzarin, V., Toffan, A., & Bargelloni, L. (2021). Transcriptome analysis reveals a complex response to reassortant strain RGNNV/SJNNV in sea bream larvae. 20th International Conference on Diseases of Fish and Shellfish - EAFF 2021 (172-063-P) European Association of Fish Pathologists. 20-23 September 2021

- Biasini, L., Toffan, A., Marsella, A., Abbadi, M., Buratin, A., & Pascoli, F. (2021). Pathogenicity of different betanodavirus RGNNV/SJNNV reassortant strains in European sea bass. 20th International Conference on Diseases of Fish and Shellfish - EAFF 2021 (187-019-P) European Association of Fish Pathologists. 20-23 September 2021
- Savoca, S., Palazzolo, S., Ilaria, C., Abbadi, M., Salogni, C., Capparucci, F., Quartesan, R., Alborali, G.L., Toffan, A., & Marino, F. (2021). Betanodavirus infection and larval enteropathy in juvenile gilthead sea breams. 20th International Conference on Diseases of Fish and Shellfish - EAFF 2021 (143). European Association of Fish Pathologists. 20-23 September 2021

c) National conferences: 0

d) Other:

(Provide website address or link to appropriate information) 5

Toffan, A. (participation as invited teacher)

Guest lecture "Viral diseases with impact on Mediterranean fish farming". Online advanced course: Aquaculture Epidemiological Surveillance - International Centre for Advanced Mediterranean Agronomic Studies (CIHEAM), 23 September - 27 October 2021 Saragoza, Spain.

https://edu.iamz.ciheam.org/EpidemiologicalSurveillance/en/pdfs/VigilanciaEpidemiologica_ING.pdf

(see also TOR.7 Scientific and Technical training)

Links:

National reference laboratory for fish, crustacean and mollusc pathology / OIE reference laboratory for viral encephalopathy and retinopathy of marine fish

<http://www.izsvenzie.com/reference-laboratories/fish-crustacean-and-mollusc-pathology/>

IZSVE's contribution to VETBIONET

<https://www.izsvenzie.com/vetbionet-network/>

EU Horizon 2020 to VETBIONET (Veterinary Biocontained facility Network for excellence in animal infectious disease research and experimentation): <http://www.vetbionet.eu/>

IZSVE's contribution to MEDAID:

<http://www.izsvenzie.com/medaid-project-stand-up-mediterranean-fish-farming/>

EU Horizon 2020: MedAID (Mediterranean Aquaculture Integrated Development)

<http://www.medaid-h2020.eu/>

IZSVE's contribution to Pathogeltrap:

<https://www.izsvenzie.it/proteine-intelligenti-catturano-virus-batteri-pesci/>

<https://pathogeltrap.eu/>

ToR 7: To provide scientific and technical training for personnel from OIE Member Countries

To recommend the prescribed and alternative tests or vaccines as OIE Standards

14. Did your laboratory provide scientific and technical training to laboratory personnel from other OIE Member Countries?

Yes

a) Technical visits: 0

b) Seminars: 1

c) Hands-on training courses: 0

d) Internships (>1 month): 1

| 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 | Algeria, Chile, Croatia, Ecuador, Egypt, Greece, Italy, Macedonia, Morocco, Norway, Peru, Portugal, Serbia, Montenegro, Spain, Sri Lanka, Tunisia, Turkey, Ukraine, UK, USA | 30 |
| d | Spain | 1 |

ToR 8: To maintain a system of quality assurance, biosafety and biosecurity relevant for the pathogen and the disease concerned

15. Does your laboratory have a Quality Management System?

Yes

| Quality management system adopted | Certificate scan (PDF, JPG, PNG format) |
|-----------------------------------|---|
| ISO 17025 | A_20_certificato ISO 17025.pdf |

16. Is your quality management system accredited?

Yes

| Test for which your laboratory is accredited | Accreditation body |
|--|---|
| Virus Isolation in Cell Cultures | ACCREDIA - Italian Accreditation System |

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

Yes

(See *Manual of Diagnostic Tests and Vaccines for Terrestrial Animals*, Chapter 1.1.4)

ToR 9: To organise and participate in scientific meetings on behalf of the OIE

18. Did your laboratory organise scientific meetings on behalf of the OIE?

No

19. Did your laboratory participate in scientific meetings on behalf of the OIE?

No

ToR 10: To establish and maintain a network with other OIE Reference Laboratories designated for the same pathogen or disease and organise regular inter-laboratory proficiency testing to ensure comparability of results

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

Not applicable (Only OIE Reference Lab. designated for disease)

21. Was your laboratory involved in maintaining a network with OIE Reference Laboratories designated for the same pathogen or disease by organising or participating in proficiency tests?

Not applicable (Only OIE Reference Lab. designated for disease)

22. Did your laboratory collaborate with other OIE Reference Laboratories for the same disease on scientific research projects for the diagnosis or control of the pathogen of interest?

Not applicable (Only OIE Reference Lab. designated for disease)

ToR 11: To organise inter-laboratory proficiency testing with laboratories other than OIE Reference Laboratories for the same pathogens and diseases to ensure equivalence of results

23. Did your laboratory organise or participate in inter-laboratory proficiency tests with laboratories other than OIE Reference Laboratories for the same disease?

No

Note: See Interlaboratory test comparisons in: Laboratory Proficiency Testing at:
<http://www.oie.int/en/our-scientific-expertise/reference-laboratories/proficiency-testing> see point 1.3

ToR 12: To place expert consultants at the disposal of the OIE

24. Did your laboratory place expert consultants at the disposal of the OIE?

No

25. Additional comments regarding your report: