

OIE Reference Laboratory Reports Activities

Activities in 2019

This report has been submitted : 2020-01-15 13:00:09

Name of disease (or topic) for which you are a designated OIE Reference Laboratory:	Viral encephalopathy and retinopathy
Address of laboratory:	Aquatic Animal Virology Unit, Specialized Virology Department, Istituto Zooprofilattico Sperimentale delle Venezie (IZSVe) Viale dell'Università, 10 35020 Legnaro (Padova), Italy
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Name (including Title) of Head of Laboratory (Responsible Official):	Calogero Terregino, 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 Aquatic Animal Virology Unit, Specialized Virology Laboratory (IZSVe)
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	50	1.628
Direct diagnostic tests			
Cell Culture	Yes	3	9
Real-time RT-PCR(rRT-PCR)	Yes	573	1.620
Immunohistochemistry (IHC)	Yes	4	50
Molecular characterization (RT-PCR and sequencing analysis)	Yes	10	9

**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
Lyophilized inactivated betanodavirus (reference strains)	RT-PCR rRT-PCR	Stored	2 ml	7,5 ml	4	<input type="checkbox"/> Africa <input type="checkbox"/> Americas <input type="checkbox"/> Asia and Pacific <input checked="" type="checkbox"/> Europe <input type="checkbox"/> Middle East
Lyophilized live betanodavirus (other strains)	all diagnostic tests	Stored	0 ml	10 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
Lyophilized live betanodavirus (reference strains)	all diagnostic tests	Stored	2 ml	13,5 ml	5	<input checked="" type="checkbox"/> Africa <input type="checkbox"/> Americas <input type="checkbox"/> Asia and Pacific <input checked="" type="checkbox"/> Europe <input type="checkbox"/> Middle East
SSN-1 cell line	Cell culture isolation	Produced and Stored	0 ml	5 flasks of 25 cm ² (25 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
GF-1 cell line	Cell culture isolation	Produced and Stored	0 ml	2 flasks of 25 cm ² (10 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
E-11 cell line	Cell culture isolation	Produced and Stored	0 ml	7 flasks of 25 cm ² (35 ml)	2	<input checked="" 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 antitetanodavirus (reference strain)	SN ELISA IHC	Stored	0 ml	1,5 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
Positive Sea Bass (serum)	SN ELISA	Produced and Provided	0 ml	7 x 150 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

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	1.187	12
FRANCE	January - December	1.732	5
DENMARK	January - February	0	11
TUNISIA	January - December	240	0
THE NETHERLANDS	April - October	5	0
CROATIA	May	18	0
MALTA	June	2	0
CYPRUS	August - November	29	2
GREECE	September	4	0
IRAN	November	16	0
ALGERIA	December	12	38
TURKEY	December	2	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
TUNISIA	OIE-Twinning project with the Veterinary Research Institute of Tunis (IRTV)	Training and on site assistance; Proficiency test; provision of reagents.
SPAIN	Diagnosis and control of VER	Remote assistance
FRANCE	Diagnosis and control of VER	Remote assistance
ALGERIA	Training on virological and immunohistochemical analyses on grouper mortality	Training and diagnostic analyses at IZSVE
SPAIN	Confirmatory diagnosis of VER through immunohistochemical analyses on grouper mortality	Diagnostic and contribution to article Valencia J.M., et al. 2019 (see Tor. 6)
IRAN	Diagnosis and control of VER in sturgeons	Remote assistance; diagnostic analyses
CYPRUS	Diagnosis and control of VER and other fish diseases	Remote assistance
DENMARK	Vaccine potency test	Diagnostic support; training at IZSVE
TUNISIA	Diagnosis and control of VER	On site assistance at fish farm; remote assistance; provision of reagents.
TUNISIA	Diagnostic support on VER in wild fish	Remote assistance; provision of reagents.

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>See also http://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>	AUSTRALIA DENMARK FRANCE GERMANY IRELAND ITALY KENYA POLAND SPAIN SWITZERLAND THE NETHERLANDS UNITED KINGDOM

MedAID	4 years	Mediterranean Aquaculture Integrated Development	See also http://www.medaaid-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	CROATIA DENMARK EGYPT FRANCE GREECE ITALY NORWAY PORTUGAL SPAIN THE NETHERLANDS TUNISIA TURKEY UNITED KINGDOM
OIE Laboratory Twinning Project: Improving IRVT diagnostic capacity for Viral Encephalopathy and Retinopathy of marine fish	18 months	To contribute to the control of viral pathologies in aquaculture, in particular VER, in order to enhance the performance and the quality of fish production in Tunisia	1. IZSve (Italy) 2. Veterinary Research Institute of Tunis (IRTV - Tunisia)	ITALY TUNISIA

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

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

Yes

If the answer is yes, please provide details of the data collected:

Scientific publications

**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: 4

Buonocore F., Nunez-Ortiz N., Picchiotti S., Randelli E., Stocchi V., Guerra L., et al. (2019). Vaccination and immune responses of European sea bass (*Dicentrarchus labrax* L.) against betanodavirus. *Fish & shellfish immunology*, 85, 78-84;

Pascoli F., Guazzo A., Buratin, A., Toson M., Buonocore F., Scapigliati G., et al. (2019). Lack of in vivo cross-protection of two different betanodavirus species RGNNV and SJNNV in European sea bass *Dicentrarchus labrax*. *Fish & shellfish immunology*, 85, 85-89;

Valencia J.M., Grau A., Pretto T., Pons J., Jurado-Rivera J.A., Castro J.A., Toffan A., Catanese, G. (2019). Viral encephalopathy and retinopathy (VER) disease in *Epinephelus marginatus* from the Balearic Islands marine protected areas. *Diseases of aquatic organisms*, 135, 49-58;

Toffan A., De Salvador M., Scholz F., Pretto T., Buratin A., Rodger H.D., Toson M., Cuenca A., Vendramin N., Lumpfish (*Cyclopterus lumpus*, Linnaeus) is susceptible to viral nervous necrosis: Result of an experimental infection with different genotypes of Betanodavirus. *J Fish Dis.* 2019 Oct 14. doi: 10.1111/jfd.13088;

b) International conferences: 5

Toffan, A., Panzarin, V., Biasini, L., Abbadi, M., Buratin, A., Pretto, T., Marsella, A. & Pascoli, F. (2019). Viral encephalo and retinopathy (VER) in gilthead sea bream: results of experimental infections with RGNNV/SJNNV betanodavirus. (p. 57). 19th International conference on diseases of fish and shellfish 09-12 September 2019, Porto, Portugal;

Toffan, A., De Salvador, M., Scholz, F., Pretto, T., Buratin, A., Cuenca, A. & Vendramin, N. (2019). Lumpfish (*Cyclopterus lumpus*) is susceptible to Viral Nervous Necrosis: result of an experimental infection with different genotypes of betanodavirus. 19th International conference on diseases of fish and shellfish, (p. 366). 09-12 September 2019, Porto, Portugal;

Toffan, A., De Salvador, S.,M., Scholz, F., Pretto, T., Buratin, A., Toson, M., Cuenca, A. & Vendramin, N. (2019). Experimental infection of Lumpfish (*Cyclopterus lumpus*) with different betanodaviruses. (p. 41). Report of the 23rd Annual Workshop of the National Reference Laboratories for Fish Diseases 27-28 May 2019 Kgs. Lyngby, Denmark

Toffan, A., Panzarin, V., Dalla Pozza, M., Manfrin, A., De Battisti, C., Abbadi, M., Hammani, D., Tlatli, A., Omri, A., Megdiche, K., Haddouchi, S., Tliba, I., Sghaier, S. & Ayari Fakhfakh, E. (2019). OIE Laboratory Twinning Project: improving the IRVT diagnostic capacity for Viral Encephalopathy and Retinopathy of marine fish. 19th International conference on diseases of fish and shellfish, (p. 467). 09-12 September 2019, Porto, Portugal;

Pretto, T., Marsella, A., Toffan, A., Pascoli, F. (2019). Betanodavirus infection in gilthead sea bream larvae: an immunohistochemical study. 19th International conference on diseases of fish and shellfish, (p. 365). 09-12

September 2019, Porto, Portugal;

c) National conferences: 4

Pascoli, F., Pretto, T., Panzarin, V., Biasini, L., Abbadi, M., Buratin, A., Marsella, A. & Toffan, A. (2019). Infezione sperimentale in larve di orata (*sparus aurata*) con betanodavirus (RGNNV/SJNNV). XXV Convegno nazionale SIPI – Società Italiana di Patologia Ittica, p. 18 (O3). October 10-12, 2019, Gaeta (LT), Italy;

Pretto, T., Marsella, A., Toffan, A. & Pascoli, F. (2019). Infezione da betanodavirus (RGNNV/SJNNV) in larve di orata (*sparus aurata*): uno studio immunostochimico. XXV Convegno nazionale SIPI – Società Italiana di Patologia Ittica, p. 19 (O4). October 10-12, 2019, Gaeta (LT), Italy;

Toffan, A., Biasini, L., Marsella, A., Abbadi, M., Toson, M., Pretto, T., Burattin, A. & Pascoli, F. (2019). Studio di patogenicità di diversi ceppi di RGNNV/SJNNV in spigola (*Dicentrarchus labrax*): risultati preliminari. XXV Convegno nazionale SIPI – Società Italiana di Patologia Ittica, p. 20 (O5). October 10-12, 2019, Gaeta (LT), Italy;

Toffan, A., De Salvador, M., Scholz, F., Pretto, T., Buratin, A., Cuenca, A. & Vendramin, N. (2019). Il lompo (*Cyclopterus lumpus*) è sensibile alla encefalo-retinopatia virale? XXV Convegno nazionale SIPI – Società Italiana di Patologia Ittica, p. 17 (O2). October 10-12, 2019, Gaeta (LT), Italy;

d) Other:

(Provide website address or link to appropriate information) 6

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

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

2) IZSVE's contribution to the OIE twinning project between (IZSVE-IRV Tunisia) on the diagnosis of viral encephalopathy and retinopathy:

<https://www.izsvenezie.com/oie-twinning-project-between-the-izsve-and-the-tunisian-veterinary-research-institute-irvt/>

3) IZSVE's contribution to VETBIONET: <https://www.izsvenezie.com/vetbionet-network/>

4) IZSVE's contribution to MEDAID:

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

5) EU Horizon 2020: MedAID (Mediterranean Aquaculture Integrated Development)

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

6) EU Horizon 2020 to VETBIONET (Veterinary Biocontained facility Network for excellence in animal infectious disease research and experimentation): <http://www.vetbionet.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: 12

b) Seminars: 0

c) Hands-on training courses: 12

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
a	Russia	7
a	United Arab Emirates	2
a	Kosovo	3
c	Tunisia	2
c	Algeria	1
c	Italy	4
c	Croatia	1
c	Barbados	2
c	Montenegro	1
c	Santo Domingo	1
d	Denmark	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	Accredia Nodavirus.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?

Yes

National/ International	Title of event	Co-organiser	Date (mm/yy)	Location	No. Participants
International	Twinning OIE IZSVE-IRTV Project: Final Meeting	Institut de la Recherche Vétérinaire de Tunisie (IRVT)	28 -29/10/2019	Tunis, Tunisia	20

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

Yes

Title of event	Date (mm/yy)	Location	Role (speaker, presenting poster, short communications)	Title of the work presented
87th General Session of the World Assembly of National Delegates of the OIE	27-28/05/2019	Paris, France	1 participant	-
OIE Global Conference on aquatic animal health	2-4/04/2019	Santiago, Chile	2 participants	-

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?

Yes

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

Purpose for inter-laboratory test comparisons ¹	No. participating laboratories	Region(s) of participating OIE Member Countries
PT in the framework of OIE-Twinning project with the Veterinary Research Institute of Tunis (IRTV) (organiser)	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

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: