OIE Reference Laboratory Reports Activities

Activities in 2021

This report has been submitted : 2022-01-19 10:18:23

Name of disease (or topic) for which you are a designated OIE Reference Laboratory:	West Nile Fever
Address of laboratory:	Via Campo Boario 64100 Teramo ITALY
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E-mail address:	f.monaco@izs.it
Website:	www.izs.it
Name (including Title) of Head of Laboratory (Responsible Official):	Nicola D'Alterio, General Director, Istituto Zooprofilattico Sperimentale dell'Abruzzo e del Molise, "G. Caporale"
Name (including Title and Position) of OIE Reference Expert:	Federica Monaco, Head of the diagnosis and surveillance of exotic viral diseases of animals laboratory. Istituto Zooprofilattico Sperimentale dell'Abruzzo e del Molise "G. Caporale"
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	
Indirect diagnostic tests		Nationally	Internationally
c-ELISA - IgG	Yes	66	2
ELISA - IgM	Yes	50	2
Virus Neutralization (microtitre)	Yes	61	2
Direct diagnostic tests		Nationally	Internationally
Virus isolation (C6/36 and Vero cells)	Yes	237	-
Real-time RT-PCR WNV lineage 1 and Lineage 2	Yes	3080	1
Whole genome sequencing	No	66	-

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
Purified MoAb vs WNV	Immunofluorescence, ELISA	Produced	40 ml	-	1	☐Africa ☐Americas ☐Asia and Pacific ☒Europe ☐Middle East
Vero/P cells	Virus isolation on tissue culture	Produced and provided	1 flask (75 cm2)	-	1	☐Africa ☐Americas ☐Asia and Pacific ☒Europe ☐Middle East
Vero & C6/36 cells	Virus isolation on tissue culture	Produced and provided	1 flask (75 cm2)	-	1	☐Africa ☐Americas ☐Asia and Pacific ☒Europe ☐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
TUNISIA	October	2 sera	2 sera
TUNISIA	October	1 blood	1 blood

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	Support to the diagnostic capabilities	Remote assistance
ITALY	In the framework of the national surveillance plan for WNV and Usutu virus for 2021, the laboratory has been in charge for: - defining the surveillance activities in animals and vectors; - harmonizing and assessing the diagnostic capabilities of the regional laboratories network through proficiency tests; the collection and management of the data generated by the surveillance activities in animals and vectors	In loco 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
Senegal – Italy Arbovirus Introduction and Emergence (SIAIE)	3 years	Characterization of WNV and USUV, geographically and within specific host and vector populations, between Senegal and Italy	-Institute Pasteur,Senegal - Fondazione Edmund Mach, Italy	SENEGAL
European network of medical and veterinary entomology (VectorNet)	5 years	Developing a network of medical and veterinary experts and organisations to maintain a common database on the presence and distribution of vectors and pathogens in vectors across Europe and the Mediterranean basin	ECDC EFSA	

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 about human outbreaks in EU Member States and EU neighbouring countries are collected from the European Surveillance System (TESSy) database while animal data are collected through the Animal Disease Information System (ADIS) of the European Commission and the World Animal Health Information System (WHAIS) database. https://wahis.oie.int/#/home Furthermore, outbreak data referred to animal cases are retrieved from National Public Health Organizations of the affected countries: • Junta de Andalucia (https://www.juntadeandalucia.es/index.html) (Spain) • Hellenic Centre of disease a prevention Keelpno (https://eody.gov.gr/en/epidemiological-statistical-data/weekly-epidemiological-reports/) (Greece) • Agence régionale de santé Provence-Alpes-Côte d'Azur (ARS Paca) https://www.paca.ars.sante.fr/recherche-globale?search_ars=west+nile (France) • Sistema Informativo Nazionale Malattie Animali (SIMAN) https://www.vetinfo.it/ (Italy)

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:
A Web Geographic Information System application has been developed to collect and disseminate disease data, climatic and environmental remote sensed data and full genome sequences of selected isolated strains of WNV. The tool (Disease Monitoring Dashboard) compiles multiple datasets through user-friendly web tools for epidemiological analysis (https://netmed.izs.it/networkMediterraneo/) WNV data are disseminated through a public web site (www.izs.it) where information and data on West Nile is continuously updated in order to have: weekly bulletins during the epidemic season summarizing the current (2021) epidemiological situations in Italy and the Mediterranean Basin; maps on entomological, virological and serological surveillance activities; the past epidemiological situations in Italy (2008-2020) and the Mediterranean Basin(2010-2020); the latest on the Italian and European Regulations issued by the Italian Ministry of Health; scientific documents on-line.

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

1. Clè M, Constant O., Barthelemy J, Desmetz C, Martin MF, Lapeyre L, Cadar D, Savini G, Teodori L, Monaco F, Schmidt-Chanasit J, Saiz J -C, Gonzales G, Lecollinet S, Beck C, Gosselet F, Van de Perre P, Foulongne V, Salinas S, Simonin Y. Correction to: Differential neurovirulence of Usutu virus lineages in mice and neuronal cells . J Neuroinflammation. 2021 Feb 23;18(1):59. doi:10.1186/s12974-021-02109-y. Erratum for: J Neuroinflammation. 2021 Jan 6;18(1):11. PMID: 33622331; PMCID: PMC7903624.
2. Clé M, Constant O, Barthelemy J, Desmetz C, Martin MF, Lapeyre L, Cadar D, Savini G, Teodori L, Monaco F, Schmidt-Chanasit J, Saiz JC, Gonzales G,Lecollinet S, Beck C, Gosselet F, Van de Perre P, Foulongne V, Salinas S, Simonin Y. Differential neurovirulence of Usutu virus lineages in mice and neuronal cells. J Neuroinflammation. 2021 Jan 6;18(1):11. doi:10.1186/s12974-020-02060-4. Erratum in: J Neuroinflammation. 2021 Feb 23;18(1):59. PMID: 33407600; PMCID: PMC7789689.
3. Cosseddu GM, Doumbia B, Scacchia M, Pinoni C, Di Provvido A, Polci A, Isselmou K, Di Gennaro A, Spedicato M, Carmine I, Savini G, Dondona AC, Iapaolo F, Valleriani F, El Mamy AB, Barry Y, Monaco F. Sero-surveillance of emerging viral diseases in camels and cattle in Nouakchott, Mauritania: an abattoir study. Trop Anim Health Prod. 2021 Mar 5;53(2):195. doi: 10.1007/s11250-021-02636-z. PMID: 33666802
4. Molini U, Franzo G, Nel H, Khaiseb S, Ntahonshikira C, Chiwome B, Baines I,Madzingira O, Monaco F, Savini G, D'Alterio N. West Nile Virus Seroprevalence in a Selected Donkey Population of Namibia. Front Vet Sci. 2021 Jun 18;8:681354. doi: 10.3389/fvets.2021.681354. PMID: 34222404; PMCID: PMC8249584.
5. Zaccaria G, Malatesta D, Jurisic L, Marcacci M, Di Teodoro G, Conte A,Teodori L, Monaco F, Marini V, Casaccia C, Savini G, Di Gennaro A, Rossi E,D'Innocenzo V, D'Alterio N, Lorusso A. The envelope protein of Usutu virusattenuates West Nile virus virulence in immunocompetent mice. Vet Microbiol. 2021 Oct 21;263:109262. doi: 10.1016/j.vetmic.2021.109262. Epub ahead of print.PMID: 34715462.
6. Zidovec-Lepej S., Vilibic-Cavlek T., Barbic L., Ilic M., Savic V., Tabain I., Ferenc T., Grgic I., Gorenec L., Bogdanic M., Stevanovic V., Sabadi D., Peric L., Potocnik-Hunjadi T., Dvorski E., Butigan T., Capak K., Listes E., Savini G. Antiviral cytokine response in neuroinvasive and non-neuroinvasive west nile virus Infection. Viruses. 2021 Feb 22;13(2):342. doi: 10.3390/v13020342. PMID:33671821; PMCID: PMC7927094.

b) International conferences: 4

1. Savini G. “WNV 2018-2020 outbreaks in Italy” Workshops of the European Reference Laboratories for EVA and arthropod-borne encephalitis viruses. 15-16 April 2021. Oral presentation (on line)
2. Savini G. “Migratory and resident birds: a complementary and extreme functional express delivery of WNV in Italy”. MOOD Expert meeting, West Nile ad hoc group. 24 June 2021.
3. Goffredo M. “Entomological surveillance”. Inter-Regional workshop on Vector Borne Diseases: Surveillance and Early Warning", hosted by AOAD (Arab Organization for Agricultural Development), OIE Representative office for the Middle East and EuFMD., 8-9 November 2021. Oral presentation (on line).
4. Goffredo M. “Vector control practices and strategies against West Nile virus” VectotNet webinar 15 October 2021. Oral presentation (on line)

c) National conferences: 11

- 5th National Congress of the Italian Society for Virology. 5-6 July 2021.
o Jurisic L., Zaccaria G., Malatesta D., Di Teodoro G., Conte A., Savini G., Lorusso A. The envelope protein of Usutu virus attenuates West Nile virus virulence in immunocompetent mice. Poster (on line).
- XXXI Annual Meeting of the Italian Society of Parassitology (SOIPA) 16 -19 June 2021
o Goffredo M. “The role of insects in spreading emerging pathogens”. Oral presentation (on line).

o Iapaolo F., Mancuso E. “The role of migratory birds in emerging pathogens spread”. Oral presentation (on line).
- XXVI Annual Meeting of the Italian Society of Entomology (CNIE) 7-11 June 2021
o De Ascentis M., Quaglia M. “Entomological surveillance in Abruzzo region, 2019-2020: mosquitoes and ecoregions”. Poster (on line).
o D’ Alessio S.G., Ippoliti C., Santilli A., De Ascentis M., Quaglia M., Pelini S., Severini F., Di Luca M., Menengon M., Toma L., Conte A., Goffredo M. Sorveglianza entomologica in Abruzzo, 2019-2020 zanzare ed ecoregioni. Poster (on line).
- Workshop “The results of the research activities in IZSAM”. Teramo, 17 June 2021
o De Ascentis M. “Artropod vectors and their pathogens: from the field to the lab”. Oral presentation (on line).
o D’Alessio S.G., Di Lorenzo A. “Artificial intelligence and Remote Sensing to monitor vectors”. Oral presentation (on line).
- Seminar “West Nile disease and Usutu virus: an update of the surveillance, diagnosis and research activities”. 27 April 2020.
o Iapaolo F. “West Nile surveillance in Italy 2018-2020”. Oral presentation (on line).
o Conte A. “West Nile spread…from the space: limitations and perspectives”. Oral presentation (on line).
o Mencattelli G. “Lineage 1 is still alive?”. Oral presentation (on line).
- Workshop “West Nile disease” Italian Society of Equids Veterinarians (SIVE). 13 April 2021.
o Savini G. “West Nile virus: a virus not to underestimate even if without crown”. Oral presentation (on line).

d) Other:
(Provide website address or link to appropriate information) 2
Please refer to the answer provided for the question n.12 for the details related to the links listed below:

Epidemiological situation in Italy and the Mediterranean region: www.izs.it
Disease Monitoring Dashboard: https://netmed.izs.it/networkMediterraneo/

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: 1
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	Italy	338
c	Italy	96
d	Italy	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)
UNI CEI EN ISO/IEC 17025:2018	Certificate_of_accreditation_ISO_17025_IZSAM.pdf

16. Is your quality management system accredited?

Yes

Test for which your laboratory is accredited	Accreditation body
i-ELISA - IgG	ACCREDIA
c-ELISA - IgG	ACCREDIA
ELISA IgM	ACCREDIA
Plaque Reduction neutralization test (PRNT)	ACCREDIA
Virus neutralization (microtitre format)	ACCREDIA
Real-time RT-PCR WNV lineage 1	ACCREDIA
Real-time RT-PCR WNV lineage 1 and lineage 2	ACCREDIA

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	ERFAN -Enhancing Research for Africa Network - Round table	34 ERFAN partners	07/21	Online	71
International	ERFAN-Enhancing Research for Africa Network - General Meeting (two days)	34 ERFAN partners	10/21	Rome(1st day) Online(2nd day)	62

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
Inter-Regional workshop on Vector Borne Diseases: Surveillance and Early Warning. AOAD, EUFMD and the FAO/OIE GF-TADs Regional Steering Committee for the Middle East	11/21	On line	Speaker	“Entomological surveillance”

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?

No

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?

No

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?

No

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
Determining a laboratory's capability to conduct specific diagnostic tests. Molecular assays: RT-PCR for viral detection and/or Lineage identification). Organizer	20	☒Africa ☐Americas ☐Asia and Pacific ☒Europe ☐Middle East
Determining a laboratory's capability to conduct specific diagnostic tests. Serological assays: ELISA IgG, ELISA IgM. Organizer	16	☐Africa ☐Americas ☐Asia and Pacific ☒Europe ☐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:

The laboratory personnel has been deeply involved in the Covid-19 pandemic management (swab analysis, epidemiological studies, etc.) and, as a consequence, the institutional activities have been affected by the pandemic. Furthermore, the national regulations related to the pandemic made difficult the activities in presence as trainings, visits or internships.