

OIE Collaborating Centres Reports Activities

Activities in 2021

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Title of collaborating centre:	Défect. Id. chez l'homme path. anim. emerg. dév. outils diag.
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ToR: To provide services to the OIE, in particular within the region, in the designated specialty, in support of the implementation of OIE policies and, where required, seek for collaboration with OIE Reference Laboratories

ToR: To identify and maintain existing expertise, in particular within its region

1. Activities as a centre of research, expertise, standardisation and dissemination of techniques within the remit of the mandate given by the OIE

Training, capacity building	
Title of activity	Scope
Online outbreak response table top exercise in Balkan and Black sea countries	- A two days online tabletop exercise was jointly organized with the CISA-INIA in Madrid to simulate an outbreak of a zoonosis in a fictive country. The exercise was dedicated to laboratories of 8 countries (Albania, Armenia, Bosnia and Herzegovina, Kosovo, Montenegro, Republic of North Macedonia, Serbia, Turkey) belonging to different fields of expertise (human biologists, animal virologists, entomologists, veterinarians, epidemiologists). It emphasizes the importance of the One Health approach in these kind of events.
OIE Laboratory Twinning programme'	OIE Laboratory Twinning programme - with Laboratoire de Diagnostic Vétérinaire et sérosurveillance des maladies animales (LADISERO), Bénin for Viral Haemorrhagic Fevers in particular Lassa Fever: - with the Office National de Recherches et de Développement de l'Élevage (ONARDEL, Mauritania, for Crimea Congo Haemorrhagic fever and Rift Valley fever
Support and training in response to the resurgence of Ebola virus in West Africa in 2021	The objective was to re-inforce diagnosis capacities and implement next generation sequencing.
SARS-CoV-2 Sequencing for surveillance and variant identification	Two protocols for targeted sequencing for SARS-CoV-2 were disseminated to (at least) 44 laboratories for veterinary virology (22) and human virology (22) within the MediLabSecure project (Balkan, Black Sea, Middle East, North Africa and Sahel regions). The first protocol dedicated to Sanger sequencing of the S gene for laboratories with minimal equipment and the second protocol for NGS sequencing of the whole genome using the MinION Nanopore technology.
Zoonoses	
Title of activity	Scope

<p>Sero-surveys and molecular screening of VHF at the human-animal interface</p>	<p>The objective was to increase the understanding of the origin, natural history and spread of VHF and to mitigate future emergences, it is crucial to determine which domestic and wild animal populations serve as natural reservoirs for these viruses. These investigations are either based on high-throughput molecular screening methods or on the search for the presence of specific for VHF, in order to determine their natural host and populations at risk.</p> <p>- - At IP Guinea, a multiplex immunoassay capable of detecting antibodies directed against EBOV and 4 other VHF (MARV, LASV, CCHFV and RVFV) was implemented in March 2021 and used for the analysis of serobanks. The assay was successfully used to screen over 800 pig sera and 100 bovine and ovine sera collected from different sites (farms) of Guinea.</p> <p>- - At IP Algeria, a surveillance program collected hundreds of serums of camels over 2020 and 2021. We collaborate with them for the research of presence of RVFV and CCHFV with two approaches: direct identification of the presence of the viruses using molecular technics, and serosurveillance using commercial serological kits (IdVet). Recent reports for neighbouring countries (Tunisia, Mali, Mauritania) showed a high level of circulation for these viruses in the region.</p>
<p>Sero-surveys and molecular screening of orthohantaviruses in rodents</p>	<p>The objective was to document the presence and diversity of hantaviruses among rodents in urban and rural areas of Cambodia.</p>
<p>Dissemination of SARS-CoV-2 and related coronaviruses in animals</p>	<p>The objective was to evaluate the exposure of zoo animals during the circulation of the virus in France in 2021</p>
<p>Identification of SARS-CoV-2 proximal precursors in bats from South Asia</p>	<p>The objective was to move forward in the quest of the animal reservoir of SARS-CoV-2, which is unknown despite reports of various SARS-CoV-2-related viruses in Asian Rhinolophus bats including the closest virus from R. affinis, RaTG13 and in pangolins . SARS-CoV-2 presents a mosaic genome, to which different progenitors contribute.</p>
<p>Identification of novel arboviruses</p>	<p>- Identification of novel arboviruses in Cambodia</p> <p>Around 500 mosquitoes have been captured in specific locations. Deep sequencing is ongoing and the project includes antibody survey in populations in contact for potential novel arboviruses.</p> <p>- Identification of novel arboviruses in Madagascar</p> <p>A total of 1501 mosquitoes have been captured in specific locations In November 2021. Nucleic acids well be sent to CC OIE in the next weeks The project includes also antibody survey in populations in contact for potential novel arboviruses. Similar samples will be collected 3 months later</p>

Diagnosis, biotechnology and laboratory	
Title of activity	Scope
Development of new methods for Hantavirus detection and characterization	<p>The aim was to develop and standardize serological and NGS tools for diagnosis and characterization of hantavirus infections, in order to document the presence and diversity of hantaviruses among rodents in urban and rural areas of Cambodia in future studies. The expression plasmids encoding the the full-length or truncated nucleoproteins and glycoproteins of the Seoul, Thailand and Thottapalayam orthohantaviruses have been obtained for the large-scale production and purification of the viral recombinant proteins.</p> <p>In parallel, a set of Luminex microspheres coupled to purified Seoul nucleoprotein have readily been produced to optimize the multiplex microsphere immune-assay protocol. In parallel, specific whole-genome sequencing using NGS technology was developed for the same viruses.</p>

ToR : To propose or develop methods and procedures that facilitate harmonisation of international standards and guidelines applicable to the designated specialty

2. Proposal or development of any procedure that will facilitate harmonisation of international regulations applicable to the surveillance and control of animal diseases, food safety or animal welfare

Proposal title	Scope/Content	Applicable area
Collaborative study for Lassa virus (LASV) RNA	<p>Early diagnosis of LASV infection is crucial to contain outbreaks. Therefore, availability of reliable diagnostics is crucial. Molecular diagnostics targeting various RNA genomic segments play a role in the detection of acute infection. The genetic diversity amongst the current seven LASV lineages presents a challenge to the development of nucleic acid amplification technique (NAT)-based assays. Further, the high biosafety (BSL4) categorisation of LASV limits sample access, restricting the evaluation of new and existing NAT assays. The availability of an International Standard and Reference Panel, which can be used in lower biosafety level laboratories, will allow for equitable comparability of assays. The International Standard is the highest order of reference reagent.</p> <p>The National Institute for Biological Standards and Control (NIBSC) in collaboration with the WHO organized a multi-center International collaborative study to evaluate candidate preparations to serve as a International Standard for Lassa virus RNA and Reference Panel. We responded to the request from the NIBSC to participate to the study and received a panel of blind-coded samples. Our results were returned to NIBSC and analysed statistically to assess the suitability of the candidate material. A report will be made available on the performance of the candidate reference material in reducing inter-laboratory variation and increasing comparability between assays.</p>	<p><input checked="" type="checkbox"/> Surveillance and control of animal diseases</p> <p><input type="checkbox"/> Food safety</p> <p><input type="checkbox"/> Animal welfare</p>

<p>Definition of guidelines for mobile laboratory deployment in response to a zoonotic outbreak (avian influenza)</p>	<p>Member states of the WHO European Region hold the highest Rapid Response Capacity, including Rapid Response Mobile Laboratories (RRML), to address Health Emergencies. RRML played a crucial role during several outbreaks of viral haemorrhagic fevers (VHFs) in Africa. In addition, Strengthening of the mobile diagnostic capacities is a key part and a prerequisite for the implementation of evidence-based measures for outbreaks control. In this context, a simulation exercise programme was introduced in 2021 to support the development and the testing of defined minimum standards. The SimEx programme brought together international experts to review minimum standards, share experience, and provide recommendations aimed at strengthening the RRML. The CC-OIE participated to all exercises organised as part of this programme:</p> <p>- A virtual Tabletop Exercise in September 2021 where participants discussed lessons learned from the COVID-19 pandemic and reviewed existing RRML coordination procedures as well as minimum standards for Laboratory Information Management Systems and Operational Support and Logistics.</p>	<p><input checked="" type="checkbox"/> Surveillance and control of animal diseases <input type="checkbox"/> Food safety <input type="checkbox"/> Animal welfare</p>
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ToR: To establish and maintain a network with other OIE Collaborating Centres designated for the same specialty, and should the need arise, with Collaborating Centres in other disciplines

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

3. Did your Collaborating Centre maintain a network with other OIE Collaborating Centres (CC), Reference Laboratories (RL), or organisations designated for the same specialty, to coordinate scientific and technical studies?

Yes

Name of OIE CC/RL/other organisation(s)	Location	Region of networking Centre	Purpose
Friedrich-Loeffler-Institut, Institute of Novel and Emerging Infectious Diseases	Greifswald-Insel Riemsermany	<input type="checkbox"/> Africa <input type="checkbox"/> Americas <input type="checkbox"/> Asia and Pacific <input checked="" type="checkbox"/> Europe <input type="checkbox"/> Middle East	Think tank on orthohantaviruses
The Pirbright Institute	Surrey, United Kingdom	<input type="checkbox"/> Africa <input type="checkbox"/> Americas <input type="checkbox"/> Asia and Pacific <input checked="" type="checkbox"/> Europe <input type="checkbox"/> Middle East	Think tank on orthohantaviruses

Laboratory of Molecular Ecology, Institute of Animal Physiology and Genetics of the Czech Academy of Sciences	Liběchov, Czech Republic	<input type="checkbox"/> Africa <input type="checkbox"/> Americas <input type="checkbox"/> Asia and Pacific <input checked="" type="checkbox"/> Europe <input type="checkbox"/> Middle East	Think tank on orthohantaviruses
Mixt Research Unit Virology - UMR 1161 Virologie, Agence Nationale Sécurité Sanitaire Alimentaire Nationale (Anses)- Institut national de recherche pour l'agriculture, l'alimentation et l'environnement (INRAE)-Ecole Nationale Vétérinaire d'Alfort (ENVA)	Maisons-Alfort, France	<input type="checkbox"/> Africa <input type="checkbox"/> Americas <input type="checkbox"/> Asia and Pacific <input checked="" type="checkbox"/> Europe <input type="checkbox"/> Middle East	Think tank on orthohantaviruses

4. Did your Collaborating Centre maintain a network with other OIE Collaborating Centres, Reference laboratories, or organisations in other disciplines, to coordinate scientific and technical studies?

No

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

5. Did your Collaborating Centre place expert consultants at the disposal of the OIE?

Yes

Name of expert	Kind of consultancy	Subject
Jean-Claude MANUGUERRA	OIE ad hoc group	Covid-19 at the animal-human interface

ToR: To provide, within the designated specialty, scientific and technical training to personnel from OIE Member Countries

6. Did your Collaborating Centre provide scientific and technical training, within the remit of the mandate given by the OIE, to personnel from OIE Member Countries?

Yes

- a) Technical visits: 2
- b) Seminars: 0
- c) Hands-on training courses: 3
- d) Internships (>1 month): 0

Type of technical training provided (a, b, c or d)	Content	Country of origin of the expert(s) provided with training	No. participants from the corresponding country

a, c	<p>Scientific and technical training to personnel from OIE Member Countries for viral haemorrhagic fever, arboviruses and orthohantaviruses sero-diagnosis, molecular detection and whole genome sequencing in human and animal populations.</p> <p>- March 2021: on the use of multiplex serology assay for VHF and arboviral serodiagnosis in human and animal populations and on NGS sequencing of full-length EBOV and SARS-CoV-2 genomes.</p>	Guinée Conakry	4
a, c	<p>Scientific and technical training to personnel from OIE Member Countries for viral haemorrhagic fever and arboviruses, molecular detection and whole genome sequencing in human and animal populations.</p> <p>- October 2021: on the use of multiplex serology assay for VHF and arboviral serodiagnosis in human and animal populations</p>	Cameroon	6
c	<p>Scientific and technical training to personnel from OIE Member Countries for orthohantaviruses sero-diagnosis, molecular detection and whole genome sequencing in human and animal populations.</p> <p>- December 2021: on the use of multiplex serology assay for orthohantavirus serodiagnosis in human and animal populations and on NGS sequencing of full-length genomes.</p>	Cambodia	2

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

7. Did your Collaborating Centre organise or participate in the organisation of scientific meetings on behalf of the OIE?

Yes

National/International	Title of event	Co-organiser	Date (mm/yy)	Location	No. Participants
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International	SARS-CoV-2 in Animals: situation update and diagnostics	INIA - National Institute for Agricultural Research (Spain), IRD - Research Institute for Development (France), National Centre for Epidemiology, Surveillance and Health Promotion (Italy), Avia-GIS (Belgium)	23/02/2021	On line	100
International	Impact of the COVID-19 pandemic on viral Vector-borne diseases identification, surveillance, and mitigation	INIA - National Institute for Agricultural Research (Spain), IRD - Research Institute for Development (France), National Centre for Epidemiology, Surveillance and Health Promotion (Italy), Avia-GIS (Belgium)	15-16/06/2021	on line	100

ToR: To collect, process, analyse, publish and disseminate data and information relevant to the designated specialty

8. Publication and dissemination of any information within the remit of the mandate given by the OIE that may be useful to Member Countries of the OIE

a) Articles published in peer-reviewed journals: 3

- First case of lethal encephalitis in Western Europe due to European bat lyssavirus type 1. Regnault B, Evrard B, Plu I, Dacheux L, Troadec E, Cozette P, Chrétien D, Duchesne M, Jean-Michel V, Jamet A, Leruez M, Pérot P, Bourhy H, Eloit M, Seilhean D. Clin Infect Dis. 2021 May 15:ciab443. doi: 10.1093/cid/ciab443. Online ahead of print. PMID: 33991184.

- The virome of Rhipicephalus, Dermacentor and Haemaphysalis ticks from Eastern Romania includes novel viruses with potential relevance for public health. Bratuleanu BE, Temmam S, Chrétien D, Regnault B, Pérot P, Bouchier C, Bigot T, Savuța G, Eloit M. Transbound Emerg Dis. 2021 Apr 11. doi: 10.1111/tbed.14105. Online ahead of print. PMID: 33840161

- A library preparation optimized for metagenomics of RNA viruses. Gil P, Dupuy V, Koual R, Exbrayat A, Loire E, Fall AG, Gimonneau G, Biteye B, Talla Seck M, Rakotoarivony I, Marie A, Frances B, Lambert G, Reveillaud J, Balenghien T, Garros C, Albina E, Eloit M, Gutierrez S. Mol Ecol Resour. 2021 Aug;21(6):1788-1807. doi: 10.1111/1755-0998.13378. Epub 2021 Apr 2.

b) International conferences: 0

c) National conferences: 0

d) Other

(Provide website address or link to appropriate information): 2

- We shared tiger and snow leopard SARS-CoV-2 sequences in the GISAID database.

- We disseminated the targeted SARS-CoV-2 and EBOV sequencing protocol to veterinary and human laboratories

9. Additional comments regarding your report:

This year again, the health crisis due to the Covid-19 pandemic had a strong negative impact on the activities of our OIE-CC. The Institut Pasteur is a major player in human epidemiology, virology and Human Public Health. Genome surveillance in humans was our first priority when the Alpha, then Delta and finally Omicron SARS-CoV-2 variants swept the European continent. In addition, travel restrictions in many countries hindered our activities in particular in capacity building. Institut Pasteur is one of the rare OIE-CC not operating in the field of veterinary medicine and our objective has been to build strong links and cooperation with other OIE-CCs since its creation as part of our One Health approach but 2020 and 2021 were not favourable years to reach this goal.