

# OIE Collaborating Centres Reports Activities

## *Activities in 2021*

**This report has been submitted : 2022-03-10 12:41:56**

<b>Title of collaborating centre:</b>	Validation, QA Europe
<b>Address of Collaborating Centre:</b>	Department of Infectious Diseases in Animals Unit Exotic and Particular Diseases Section Epizootic Diseases Groeselenberg 99 B-1180 Ukkel BELGIUM
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<b>Name of Director of Institute (Responsible Official):</b>	Prof Dr Christian Léonard
<b>Name (including Title and Position) of Head of the Collaborating Centre (formally OIE Contact Point):</b>	Dr Nick De Regge, Head of Unit
<b>Name of writer:</b>	Kris De Clercq, David Lefebvre, Nick De Regge

**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**

<b>Disease control</b>	
<b>Title of activity</b>	<b>Scope</b>
Assessment of the control measures of the category A diseases of Animal Health.	To assess and validate control measures for disease control.
Evaluation of the possibility to transmit bluetongue virus serotype 8 by artificial insemination with frozen-thawed semen from naturally infected bulls.	To validate the quality of methods for the control of semen as a tool in disease control.
<b>Epidemiology, surveillance, risk assessment, modelling</b>	
<b>Title of activity</b>	<b>Scope</b>
Surveillance of foot-and-mouth disease virus serotype C in the world. In collaboration with the OIE/FAO FMD Network.	Validation of a surveillance tool for the detection of the presence or freedom of virus strains
Surveillance using Complete Coding Sequencing to determine the circulating Recombinant Lumpy Skin Disease Viruses based on samples Collected from Outbreaks in Northern Vietnam.	To validate and to determine the quality of full genome sequencing as surveillance method to determine the circulating Lumpy Skin Disease Viruses with specific focus on recombinant LSDVs.
Surveillance of Bluetongue Virus Infections in Cattle Herds of Manabí Province of Ecuador.	Validation and quality assessment of a surveillance tool for the determination of the circulating virus strains
Risk Assessment of Foot-and-Mouth Disease Virus in Commercial Farms of Ethiopia.	Quality control of a Risk Assessment method to determine the risk factors of Foot-and-Mouth Disease Virus in Commercial Farms.
<b>Training, capacity building</b>	
<b>Title of activity</b>	<b>Scope</b>
Collaboration between the OIE CC Sciensano Belgium and the National Veterinary Institute, Burundi.	This collaboration project aims to build the capacity of the FMD Unit at the NVI-Burundi for the improvement of the diagnosis of and control of foot-and-mouth disease virus (FMDV) in Burundi and in order to prepare this laboratory for a possible OIE Twinning programme.
Validation, Quality Assessment and Quality Control of FMDV, BTV and capripox viruses Diagnostic Assays.	Training and capacity building of scientists of several European countries for the laboratory and clinical diagnosis of FMD, BT and capripox viruses and their differential diagnosis.

Development, validation, Quality Assessment and Quality Control of real-time RT-PCR and sequencing of FMDV and Seneca Valley Virus.	Training and capacity building of scientists and technicians of The OIE Ref Centre for FMD BVI, Botswana and the Nat Ref Lab for FMD from Burundi for using real-time RTPCR and sequencing as a tool for the diagnosis and analysis of FMDV and Seneca Valley Virus.
Improving laboratory diagnostic capacities of epizootic diseases using knowledge modelling.	To improve the laboratory diagnostic capacities and its quality.
<b>Diagnosis, biotechnology and laboratory</b>	
<b>Title of activity</b>	<b>Scope</b>
Using Ear Notch Testing and Skin Biopsies for the Detection of Clinical and Subclinical Lumpy Skin Disease.	Development, quality evaluation and validation of Ear Notch Testing and Skin Biopsies for the Detection of Clinical and Subclinical Lumpy Skin Disease. Evaluation of the diagnostic value compared to blood samples.
Validation of serotype specific real time RT-PCRs for FMDV and BTV.	Development, quality evaluation and validation of serotype specific real time RT-PCRs for the detection and differentiation of the 7 FMDV serotypes and the 27 BTV serotypes. Validation of the analytical and diagnostic specificity and sensitivity using several strains per serotype.
Selection and use of reference panels for foot-and-mouth disease.	Gap analysis in the selection and use of reference panels for the laboratory diagnosis of foot-and-mouth disease.
Validation of DIVA real time PCRs, for the detection and differentiation of capripox field viruses from vaccine strains	Evaluation and validation of the different analytical and diagnostic parameters of DIVA real time PCRs, for the detection and differentiation of capripox field viruses from vaccine strains, using samples from lumpy skin disease infection trials and vaccine trials. The fit for purpose of the PCRs were checked.
Validation and quality control of a new sequencing tool to determine Complete Coding Sequence of the Lumpy Skin Disease Viruses to distinguish wild type strains, recombinant strains (from Vietnam) and vaccine strains.	To validate and to determine the quality of a sequencing tool to determine the complete coding sequence of viruses.
<b>Vaccines</b>	
<b>Title of activity</b>	<b>Scope</b>
Review: Vaccines and Vaccination against Lumpy Skin Disease (LSD).	Review on vaccines for LSD including a description on the need for independent quality control.
FMD vaccine matching: inter laboratory study for improved understanding of r1 values, in collaboration with the OIE Reference Laboratories for FMD at Anses (France) and at TPI (UK).	Validation and quality control of FMD vaccine matching by inter laboratory study.
Comparative in vivo evaluation of lumpy skin disease virus-based live attenuated vaccines.	The scope of this activity is to control in vivo the quality of commercially available or newly developed live attenuated lumpy skin disease vaccines against an LSDV infection in cattle. The aim of the study is to evaluate whether the LSD attenuated vaccines are able to provide protection in an efficient and safe (side effects) way.
The Importance of in vitro Quality Control of LSDV Live Attenuated Vaccines for its Safe Application in the Field.	The scope of this activity is to control in vitro the quality of commercially available live attenuated lumpy skin disease vaccines against an LSDV infection in cattle. The aim of the study is to evaluate whether the LSD attenuated vaccines contain the virus that is mentioned by the producer and is free of extraneous agents.

**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
Quality control of virus strains used in diagnostic assays and for vaccine evaluation and validation.	Virus strains used in the laboratory for serological (virus neutralisation, ELISAs) or virological (virus isolation, antigen ELISA) assays as antigen or as control are checked on a yearly basis by sequencing to evaluate possible deviation after cultivation or passages from the original strains or from the reference strains. Reference strains are obtained from the OIE Ref Centre at Anses, France or at TPI, UK.	<input checked="" type="checkbox"/> Surveillance and control of animal diseases <input type="checkbox"/> Food safety <input type="checkbox"/> Animal welfare
Quality control and determination of performance characteristics of DIVA real time PCRs for the detection and differentiation of capripox field viruses from recombinant strains and vaccine strains.	Evaluation and validation of the different analytical and diagnostic parameters of a DIVA real time PCR, for the detection and differentiation of capripox field viruses from recombinant strains and vaccine strains, using samples from lumpy skin disease infection trials, vaccine trials and from field outbreaks. The fit for purpose of these DIVA PCRs is checked.	<input checked="" type="checkbox"/> Surveillance and control of animal diseases <input type="checkbox"/> Food safety <input type="checkbox"/> Animal welfare
Evaluation and validation of an Immunoperoxidase monolayer assay (IPMA) for the detection of antibodies against recombinant LSD viruses.	Quality control and validation of an immunoperoxidase monolayer assay (IPMA) to detect antibodies against recombinant lumpy skin disease field virus strains in comparison to VNTs and ELISAs.	<input checked="" type="checkbox"/> Surveillance and control of animal diseases <input type="checkbox"/> Food safety <input type="checkbox"/> Animal welfare

**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

<p>The OIE FMD Reference Laboratory The Pirbright Laboratory UK</p>	<p>UK</p>	<ul style="list-style-type: none"> <li><input type="checkbox"/> Africa</li> <li><input type="checkbox"/> Americas</li> <li><input type="checkbox"/> Asia and Pacific</li> <li><input checked="" type="checkbox"/> Europe</li> <li><input type="checkbox"/> Middle East</li> </ul>	<ul style="list-style-type: none"> <li>- OIE/FAO FMD Reference Laboratory Network</li> <li>- Vaccine matching</li> <li>- International proficiency tests</li> <li>- Post vaccination monitoring</li> <li>- Virus and sequence exchange</li> <li>- Obtaining viral reference strains</li> </ul>
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<p>The OIE FMD Reference Laboratory Anses, Maisons Alfort, Paris, France</p>	<p>France</p>	<p> <input type="checkbox"/> Africa  <input type="checkbox"/> Americas  <input type="checkbox"/> Asia and Pacific  <input checked="" type="checkbox"/> Europe  <input type="checkbox"/> Middle East                 </p>	<p>- OIE/FAO FMD Reference</p> <p>Laboratory Network</p> <p>- Vaccine matching</p> <p>- International proficiency tests</p> <p>- Post vaccination monitoring</p> <p>- Virus and sequence exchange</p> <p>- Obtaining viral reference strains</p>
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<p>The OIE CC Institute of Diagnostic Virology Friedrich Loeffler Institut (FLI)  Germany</p>	<p>Germany</p>	<p><input type="checkbox"/>Africa <input type="checkbox"/>Americas <input type="checkbox"/>Asia and Pacific <input checked="" type="checkbox"/>Europe <input type="checkbox"/>Middle East</p>	<p>- OIE/FAO FMD Reference  Laboratory Network  - Vaccine matching  - International proficiency tests  - Post vaccination monitoring  - Virus and sequence exchange  - Obtaining cell cultures</p>
<p>The OIE FMD Reference Laboratory OVI Onderstepoort South-Africa</p>	<p>South-Africa</p>	<p><input checked="" type="checkbox"/>Africa <input type="checkbox"/>Americas <input type="checkbox"/>Asia and Pacific <input type="checkbox"/>Europe <input type="checkbox"/>Middle East</p>	<p>- OIE/FAO FMD Reference  Laboratory Network  - Vaccine matching  - International proficiency tests  - Post vaccination monitoring  - Virus and sequence exchange</p>

<p>The OIE FMD Reference Laboratory Istituto Zooprofilattico Sperimentale della Lombardia e dell'Emilia Romagna Brescia Italy</p>	<p>Italy</p>	<ul style="list-style-type: none"> <li><input type="checkbox"/> Africa</li> <li><input type="checkbox"/> Americas</li> <li><input type="checkbox"/> Asia and Pacific</li> <li><input checked="" type="checkbox"/> Europe</li> <li><input type="checkbox"/> Middle East</li> </ul>	<ul style="list-style-type: none"> <li>- OIE/FAO FMD Reference</li> <li>Laboratory Network</li> <li>- Vaccine matching</li> <li>- International proficiency tests</li> <li>- Post vaccination monitoring</li> <li>- Virus and sequence exchange</li> <li>- Obtaining viral reference strains</li> </ul>
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<p>The OIE FMD Reference Laboratory                  SENASA Buenos Aires Argentina</p>	<p>Argentina</p>	<p> <input type="checkbox"/> Africa  <input checked="" type="checkbox"/> Americas  <input type="checkbox"/> Asia and Pacific  <input type="checkbox"/> Europe  <input type="checkbox"/> Middle East                 </p>	<p>- OIE/FAO FMD Reference Laboratory Network</p> <p>- Vaccine matching</p> <p>- International proficiency tests</p> <p>- Post vaccination monitoring</p>
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<p>The OIE FMD Reference Laboratory BVI Gaborone Botswana</p>	<p>Botswana</p>	<p><input checked="" type="checkbox"/>Africa  <input type="checkbox"/>Americas  <input type="checkbox"/>Asia and Pacific  <input type="checkbox"/>Europe  <input type="checkbox"/>Middle East</p>	<p>- OIE/FAO FMD Reference   Laboratory Network   - Vaccine matching   - International proficiency tests   - Post vaccination monitoring   - Virus and sequence exchange   - Obtaining viral reference strains</p>
<p>The OIE FMD Reference Laboratory PANAFTOSA Brasil</p>	<p>Brasil</p>	<p><input type="checkbox"/>Africa  <input checked="" type="checkbox"/>Americas  <input type="checkbox"/>Asia and Pacific  <input type="checkbox"/>Europe  <input type="checkbox"/>Middle East</p>	<p>- OIE/FAO FMD Reference   Laboratory Network   - Vaccine matching   - International proficiency tests   - Post vaccination monitoring   - sequence exchange</p>

<p>The OIE FMD Reference Laboratory LVRI Lanzou China</p>	<p>China</p>	<ul style="list-style-type: none"> <li><input type="checkbox"/> Africa</li> <li><input type="checkbox"/> Americas</li> <li><input checked="" type="checkbox"/> Asia and Pacific</li> <li><input type="checkbox"/> Europe</li> <li><input type="checkbox"/> Middle East</li> </ul>	<ul style="list-style-type: none"> <li>- OIE/FAO FMD Reference</li> <li>Laboratory Network</li> <li>- Vaccine matching</li> <li>- International proficiency tests</li> <li>- Post vaccination monitoring</li> <li>- sequence exchange</li> </ul>
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<p>The OIE FMD Reference Laboratory PIADC Plum Island US</p>	<p>US</p>	<p> <input type="checkbox"/> Africa  <input checked="" type="checkbox"/> Americas  <input type="checkbox"/> Asia and Pacific  <input type="checkbox"/> Europe  <input type="checkbox"/> Middle East                 </p>	<p>- OIE/FAO FMD Reference</p> <p>Laboratory Network</p> <p>- Vaccine matching</p> <p>- International proficiency tests</p> <p>- Post vaccination monitoring</p> <p>- Virus and sequence exchange</p> <p>- Obtaining viral reference strains</p>
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<p>The OIE FMD Reference Laboratory ARRIAH of the Russian Federation</p>	<p>Russia</p>	<p><input type="checkbox"/>Africa  <input type="checkbox"/>Americas  <input type="checkbox"/>Asia and Pacific  <input checked="" type="checkbox"/>Europe  <input type="checkbox"/>Middle East</p>	<p>- OIE/FAO FMD Reference   Laboratory Network   - Vaccine matching   - International proficiency tests   - Post vaccination   monitoring   - Sequence exchange</p>
<p>The OIE FMD Reference Laboratory National Institute of Animal Health Department of Livestock Development Pakchong THAILAND</p>	<p>Thailand</p>	<p><input type="checkbox"/>Africa  <input type="checkbox"/>Americas  <input checked="" type="checkbox"/>Asia and Pacific  <input type="checkbox"/>Europe  <input type="checkbox"/>Middle East</p>	<p>- OIE/FAO FMD Reference   Laboratory Network   - Vaccine matching   - International proficiency tests   - Post vaccination   monitoring   - Sequence exchange</p>

**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?**

Yes

Name of OIE CC/RL/other organisation(s)	Location	Region of networking Centre	Purpose
The OIE Bluetongue Reference Laboratory Pirbright  Laboratory UK	UK	<input type="checkbox"/> Africa <input type="checkbox"/> Americas <input type="checkbox"/> Asia and Pacific <input checked="" type="checkbox"/> Europe <input type="checkbox"/> Middle East	- Diagnostic assay and vaccine quality control for bluetongue viruses  - International proficiency testing
The OIE Poxvirus Reference Laboratory Pirbright Laboratory  UK	UK	<input type="checkbox"/> Africa <input type="checkbox"/> Americas <input type="checkbox"/> Asia and Pacific <input checked="" type="checkbox"/> Europe <input type="checkbox"/> Middle East	- Diagnostic assay and vaccine quality control for lumpy skin disease viruses  - International proficiency testing
The OIE Rift Valley fever Reference Laboratory, Institut Pasteur, Paris France	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	- Diagnostic assay and vaccine quality control for Rift valley fever viruses  - International proficiency testing
The Kimron Veterinary Institute, Bet Dagan, Israel	Israel	<input type="checkbox"/> Africa <input type="checkbox"/> Americas <input type="checkbox"/> Asia and Pacific <input type="checkbox"/> Europe <input checked="" type="checkbox"/> Middle East	- Diagnostic assay and vaccine quality control for bluetongue viruses, FMDV, capripox viruses  - International proficiency testing
The OIE Lumpy skin disease Reference Laboratory OVI Onderstepoort South-Africa	South-Africa	<input checked="" type="checkbox"/> Africa <input type="checkbox"/> Americas <input type="checkbox"/> Asia and Pacific <input type="checkbox"/> Europe <input type="checkbox"/> Middle East	- Diagnostic assay and vaccine quality control for lumpy skin disease viruses  - International proficiency testing

**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
Kris De Clercq	Vice President SCAD	OIE TAHSC-SCAD Task Force FMD, 12/01/2021, Webmeeting
Kris De Clercq	Representative SCAD	GF-TADs LSD Emergency Response Asia meeting; 14/01/2021; Webmeeting
Kris De Clercq	Representative SCAD	Working group AHL Category A Diseases meeting; 20/01/2021; Webmeeting
Kris De Clercq ;David Lefebvre	Representative SCAD; Representative OIE CC	EuFMD Standing Committee for Surveillance and Applied research; 22/01/2021; Webmeeting
Kris De Clercq	Vice President SCAD	OIE Scientific Commission; 1-11/2/21; Webmeeting
Kris De Clercq	Vice President SCAD	OIE FMD ad hoc group; 23/3 and 21 and 30/4/2021; Webmeeting
Kris De Clercq	Vice President SCAD	OIE Status submission tool; 29/3/2021; Webmeeting
Kris De Clercq; David Lefebvre	Representative SCAD; Representative OIE CC	EuFMD Preparedness vaccination FAST diseases; 31/3/2021; Webmeeting
Kris De Clercq;	Vice President SCAD	OIE pre-General Session Webinar: OIE Manual BSC; 12/4/2021; Webmeeting
Kris De Clercq	Vice President SCAD	OIE pre-General Session Webinar: OIE Terrestrial Code; 14 and 16/4/2021; Webmeeting
Kris De Clercq	Vice President SCAD	OIE LSD Technical Support Asia; 3/5 and 7/6 and 22/7/2021; and GF-TADs LSD Emergency Response Asia meeting; 26/08/2021 Webmeeting
Kris De Clercq	Vice President SCAD	OIE FMD Status Russia; 3/5/2021; Webmeeting; OIE FMD Status Malaysia; 5/5/2021; Webmeeting
Kris De Clercq	Vice President SCAD	OIE Gen Ses Coordination Session; 20/5/2021; Webmeeting; OIE Gen Ses SCAD preparation; 21/5/2021; Webmeeting
Kris De Clercq	Vice President SCAD	OIE Gen Ses Coordination Session; 20/5/2021; Webmeeting; OIE Gen Ses SCAD preparation; 21/5/2021; Webmeeting
Kris De Clercq	Vice President SCAD	OIE Gen Ses 2021; 25-28/5/2021; Webmeeting
Kris De Clercq	Vice President SCAD	OIE TAHSC-SCAD Task Force FMD, 8 and 17 and 25/6 and 6 and 26/7/2021, Webmeeting;

Kris De Clercq	Vice President SCAD	OIE FMD Status Turkey; 30/6/2021; Webmeeting
Kris De Clercq	Vice President SCAD	OIE Scientific Commission; 13-24/9/2021; Webmeeting
Kris De Clercq	Vice President SCAD	OIE FMD ad hoc group; 18-27/10/2021; Webmeeting
Nick De Regge; David Lefebvre	Representatives OIE CC	OIE/FAO FMD Reference Laboratories Network Meeting; 23-24/11/2021; Webmeeting

**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: 0
- b) Seminars: 4
- c) Hands-on training courses: 1
- 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
b	Workshop on diseases caused by capripox viruses and on LSD proficiency test	Online	65
b	Workshop on FMD proficiency test	Online	48
b	Seminar on molecular epidemiology FMDV O/EA-3	Online	72
b	Seminar on FMD vaccine matching	Online	32
c	FMD Emergency Preparation Course (FEPC) Belgium (Flemish/French); 19/05/2021 - 16/06/2021.	Online	112

**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
International	OIE/FAO FMD Reference Laboratories Network meeting	OIE/FAO FMD Reference OIE Ref Centre The Pirbright Institute, UK	11/2021	Online	67

**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: 14

Paton D, Di Nardo A, Knowles N, Wadsworth J, Pituco M, Cosivi O, Rivera A, Bakkali-Kassimi L, Brocchi E, De Clercq K, Carrillo C, Maree F, Singh R, Vosloo W, Park M, Sumption K, Ludi A, King D (2021). The history of foot-and-mouth disease virus serotype C: the first known extinct serotype? *Virus Evolution*, 2021, 7(1): veab009 veab009, <https://doi.org/10.1093/ve/veab009>

Vandenbussche F, Bourg M, Mathijs E, Lefebvre D, De Leeuw I, Haegeman A, Aerts L, Van Borm S, and De Clercq K (2021). Nearly Complete Genome Sequences of Two Bluetongue Viruses Isolated during the 2020 Outbreak in the Grand Duchy of Luxembourg. *Microbiol Resour Announc*. 2021 10(14):e00210-21. doi: 10.1128/MRA.00210-21. PMID: 33833026

Ludi AB, Mioulet V, Bakkali Kassimi L, Lefebvre D, De Clercq K, Chitsungo E, Nwankpa N, Vosloo W, Paton DJ and King DP (on behalf of the OIE/FAO FMD Reference Laboratory Network) (2021). Selection and use of reference panels: a case study highlighting current gaps in materials available for foot-and-mouth disease. *Rev. Sci. Tech. Off. Int. Epiz.*, 2021, 40 (1), 239-251. <https://doi.org/10.20506/rst.40.1.3221>

De Clercq K, Vandaele L, Vanbinst T, Riou M, Deblauwe I, Wesselingh W, Pinard A, Van Eetvelde M, Boulesteix O, Leemans B, Gélinau R, Vercauteren G, Van der Heyden S, Beckers J-F, Saegerman C, Sammin D, de Kruif A and De Leeuw I. (2021). Transmission of bluetongue virus serotype 8 by artificial insemination with frozen-thawed semen from naturally infected bulls. *Viruses* 2021, 13, 652. <https://doi.org/10.3390/v13040652> , PMID: 33918924

Haegeman A, De Leeuw I, Mostin L, Van Campe W, Aerts L, Venter E, Tuppurainen E, Saegerman C, De Clercq K (2021). Comparative evaluation of lumpy skin disease virus-based live attenuated vaccines. *Vaccines* 2021, 9(5), 473. <https://doi.org/10.3390/vaccines9050473>

Vidanović D, Tešović B, Šekler M, Debeljak Z, Vasković N, Matović K, Koltsov A, Krstevski K, Petrović T, De Leeuw I, Haegeman A. Validation of TaqMan-Based Assays for Specific Detection and Differentiation of Wild-Type and Neethling Vaccine Strains of LSDV. *Microorganisms*. 2021; 9(6):1234. doi: 10.3390/microorganisms9061234. PMID: 34204157

Cargnel M, Bianchini J, Welby S, Koenen F, Van der Stede Y, De Clercq K, Saegerman C. (2021). Improving laboratory diagnostic capacities of epizootic diseases using knowledge modelling. *Transbound Emerg Dis.*, 68 (3), 1175-1189, <https://doi.org/10.1111/tbed.13768>.

Haegeman A, De Leeuw I, Saduakassova M, Van Campe W, Aerts L, Philips W, Sultanov A, Mostin L, De Clercq K (2021). The Importance of Quality Control of LSDV Live Attenuated Vaccines for its Safe Application in the Field. *Vaccines* 2021, 9, 1019. <https://doi.org/10.3390/vaccines9091019>

Aerts L, Haegeman A, De Leeuw I, Philips W, Van Campe W, Behaeghel I, Mostin L, De Clercq K. (2021). Detection of Clinical and Subclinical Lumpy Skin Disease Using Ear Notch Testing and Skin Biopsies. *Microorganisms*. 2021; 9(10):2171. <https://doi.org/10.3390/microorganisms9102171>

Tuppurainen E, Dietze K, Wolff J, Bergmann H, Beltran-Alcrudo D, Fahrion A, Lamien CE, Busch F, Sauter-Louis C, Conraths FJ, De Clercq K, Hoffmann B, Knauf S. (2021). Review: Vaccines and Vaccination against Lumpy Skin Disease. *Vaccines*. 2021; 9(10):1136. <https://doi.org/10.3390/vaccines9101136>

De la Torre, E., Moreira, N., Saegerman, C., De Clercq, K., Salinas, M., Maldonado, A., Jarrín, D., Sol Vaca, M., Pachacama, S., Espinoza, J., Delgado, H., Barrera, M. (2021). Bluetongue Virus Infections in Cattle Herds of Manabí Province of Ecuador. *Pathogens* 2021, 10, 1445. <https://doi.org/10.3390/pathogens10111445>

Agianniotaki E., Chaintoutis SC., Haegeman A., De Clercq K., Chondrokouki E., C. Dovas. (2021) Development of a TaqMan probe-based real-time PCR method for the specific detection of wild type lumpy skin disease virus with beta-actin as internal amplification control. *Molecular and Cellular Probes*, 60, 2021, 101778. <https://doi.org/10.1016/j.mcp.2021.101778>

Mathijs E, Vandebussche F, Nguyen L, Aerts L, Nguyen T, De Leeuw I, Quang M, Nguyen D, Philips W, Vui Dam T, Haegeman A, Van Borm S, and De Clercq K (2021). Complete Coding Sequence of Recombinant Lumpy Skin Disease Viruses Collected in 2020 from Four Outbreaks in Northern Vietnam. *Microbiol Resour Announc*. 2021, 10, 48, e00897-21.

Woldemariyam FT, De Vleeschauwer A, Hundessa N, Muluneh A, Gizaw D, Tannel S, De Clercq K, Lefebvre D, Paeshuysse J (2021)224 (Accept). Risk Factor Assessment, Sero-Prevalence and Genotyping of Foot-and-Mouth Disease Virus in Commercial Farms of Ethiopia from October 2018 to February 2020. *Agriculture*

b) International conferences: 0

c) National conferences: 1

-19/5/2021, Oral presentation : D. Lefebvre. "Opening Webinar - EuFMD FEPC\_Belgium Course - Formation en ligne sur la détection précoce de la fièvre aphteuse en Belgique / Online opleiding over vroegtijdige opsporing van Mond- en Klauwzeer in België, Titel presentatie: "De rol van het nationale referentielaboratorium voor MKZ"; online

-19/05/2021 - 16/06/2021, FMD Emergency Preparation Course (FEPC) Belgium (Flemish/French); Trainer: David Lefebvre.

d) Other

(Provide website address or link to appropriate information): 6

EFSA AHAW Panel (EFSA Panel on Animal Health and Welfare), Nielsen SS, Alvarez J, Bicout DJ, Calistri P, Depner K, Drewe JA, Garin-Bastuji B, Gonzales Rojas JL, Gortazar Schmidt C, Herskin M, Michel V, Miranda Chueca MA, Pasquali P, Roberts HC, Sihvonen LH, Spoolder H, Stahl K, Velarde A, Viltrop A, Winckler C, De Clercq K, Klement E, Stegeman JA, Gubbins S, Antoniou S-E, Broglia A, Van der Stede Y, Zancanaro G and Aznar I, 2021. Scientific Opinion on the assessment of the control measures of the category A diseases of Animal Health Law: African Swine Fever. *EFSA Journal* 2021;19(1):6402, 82 pp. <https://doi.org/10.2903/j.efsa.2021.6402>

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### **9. Additional comments regarding your report:**

The COVID-19 crisis had a serious impact on the organisation of scientific and technical training, especially on the organisation of Technical visits, Hands-on training courses and Internships.