

OIE Collaborating Centres Reports Activities

Activities in 2018

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Title of collaborating centre:	Zoonoses in Europe
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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

Disease control	
Title of activity	Scope
Avian Influenza	<p>In 2018, a sharp decline of previous high numbers of outbreaks and cases of HPAI H5(N6) in kept birds (n=3) and wild birds (n=3) was observed in Germany. This trend was reported also from other European countries. The FLI animal disease task force was involved in outbreak investigations in poultry holdings and shared its experiences with European partners. Additional activity of the laboratory focused on samples from Bangladesh and Egypt.</p>
Technical Support for Namibia in Eliminating Rabies in Dogs	<p>OIE/German Project to eliminate rabies in dogs in Namibia: Epidemiological Analysis of the Rabies Situation 2011-2017 in Namibia</p> <p>Final Report: Molecular Characterization of RABVs from Northern communal areas of Namibia and Drafting of Action Plan 2019 in the frame of the Namibian Dog rabies Elimination Programme</p>
West-Nil-Virus und Usutu-Virus	<p>Between 28th August 2018 and 9th October 2018, 12 cases of WNV infections in birds and 2 cases of WNV infections in horses were reported in Germany. It is the first time, that WNV infections were detected in resident wild and aviary birds, such as common blackbirds, northern goshawks, great grey owls, snowy owls and tawny owl as well as in horses in Eastern and Southeastern Germany. The FLI animal disease task force was involved in outbreak investigations in zoological gardens.</p> <p>Other European countries reported ongoing WNV activity in 2018 with a higher number of human and horse cases as in the last years.</p> <p>Extraordinary high temperatures in 2018 presumably led to decreased averaged extrinsic incubation period values for WNV in mosquitoes, leading to rapid virus amplification and greater transmission risk for vertebrates in Germany.</p> <p>The USUV epidemic in 2018 was the most severe and longest-lasting epidemic that has occurred in Germany so far. A nationwide distribution of USUV infection under the resident bird population in all federal states of Germany could be detected. More than 750 cases of USUV infected wild- and zoo birds were detected to date.</p> <p>The first results have been published, however studies are still ongoing</p>
Epidemiology, surveillance, risk assessment, modelling	

Title of activity	Scope
German nationwide wild bird surveillance network for zoonotic arthropod-borne virus infections in migratory and resident birds.	This unique German monitoring network within the frame of the German Centre for Infection Research (DZIF) includes more than 20 different collection sites distributed all over Germany and brings together veterinary universities or institutes, bird clinics, wild bird rescue stations, zoological gardens as well as ornithologists. We investigated preferential blood samples by WNV and USUV-specific real-time polymerase chain reactions as well as by differentiating virus neutralization tests. In addition, we examined different organ samples from diseased or dead wild birds. In 2018 WNV infections were detected for the first time in Germany in resident wild and aviary birds, such as common blackbirds, northern goshawks, great grey owls, snowy owls and tawny owl as well as in horses in Eastern and Southeastern Germany.
Global re-emergence of glanders	Surveillance of glanders in Europe, Asia and South America is ongoing testing thousands of samples every year. The improvement of international regulations and developing better tests is a permanent task to prohibit introduction of glanders to free areas and transmission to humans.
Re-emergence of human and animal brucellosis in developing countries	Disruption of state structures worldwide, climate change and globalization have favoured the re-emergence of brucellosis in man and animals. Ongoing surveillance in various not EU countries and risk analysis for transmission or importation to EU via infected animals, food, feed or travelers are permanent tasks
Molecular epidemiology of Shiga toxin-producing E. coli (STEC/EHEC)	Assessing the association between the abundance of STEC strains in cattle and risk of human disease in the same geographic region; efforts focussed to develop high-impact testing and management strategies in cattle on STEC strains that pose the greatest risk to human health (Advice provided to Agriculture and Agri-Food Canada, Alberta Health Service and University of Calgary)
Training, capacity building	
Title of activity	Scope
Establishing specialized labs for brucellosis diagnosis	In Pakistan and Egypt already existing laboratories have been equipped to carry out specific methods for the diagnosis of brucellosis. Training courses in brucellosis diagnosis have been conducted.
Zoonoses	
Title of activity	Scope
Crimean-Congo Hemorrhagic Fever Virus	In 2018 we have also carried out (together with our local partners) CCHF seroprevalence and molecular diagnostic studies in domestic ruminants in Egypt, Mauritania, Cameroon, Pakistan and Ukraine. The results have been published, however studies are still ongoing. Therefore FLI has developed indirect ELISAs for sheep, goat and cattle CCHFV antibodies and competition ELISAs for species independent detection of CCHFV infections.

<p>The Role of Livestock and Wild Animal Species in the Biology of Filoviruses</p>	<p>Development of indirect ELISA for swine based nucleoprotein of Ebola virus, Sudan virus, Reston virus, and Marburg virus and confirmatory assays were established. Serological evidence for the circulation of ebolaviruses in swine from Sierra Leone and Guinea was found. These are antigenically related but not identical to EBOV, and could represent new ebolaviruses with unknown pathogenic and/or zoonotic potential.</p> <p>Sequencing of filovirus host receptor genes in animal samples from Sierra Leone to assess potential susceptibility of these animal species against EBOV and other filoviruses. Virus-host interactions are being studied in order to identify novel therapeutic targets.</p>
<p>Rabies research and virus-host interaction</p>	<p>Pathogenicity of bat associated lyssaviruses was comparatively studied in a mouse model</p> <p>New commercial later flow devices for rabies diagnosis were assessed</p> <p>Long term immunity and efficacy of the oral rabies vaccine construct SPBN GASGAS was studied in red foxes</p> <p>Differences in oral rabies vaccine uptake in wildlife reservoir hosts was studied.</p> <p>Virus-host interaction of phylogroup II lyssaviruses studies: The pathogenicity of Lagos bat virus in its reservoir host is analyzed.</p>
<p>Zoonotic Borna Virus</p>	<p>An additional case of human VSBV-1-infection (animal caretaker) was studied and published in 2018. Furthermore, samples of all type of exotic squirrels were screened for VSBV-1, also outside Germany e.g. in the Netherlands. The original reservoir of VSBV-1 is still unknown and therefore squirrels from different countries where the exotic squirrels are originating will be tested within the new project "ZooBoCo" (funded by the German Research Ministry).</p> <p>Also the first confirmed human cases with the classical Borna disease virus 1 (BoDV-1) could be identified and were further characterized. (Schlottau et al., NEJM 2018). The zoonotic potential was further supported by additional lethal BoDV-1-related encephalitis cases in Germany.</p>
<p>Zoonotic Poxviruses</p>	<p>Three cases of orthopoxvirus infections in animals were diagnosed and three different cowpox viruses (CPXV) could be isolated and characterized. In addition to isolates from diseased cat samples, two isolates from reservoir species (bank vole, common vole) were generated.</p> <p>Three cases of parapox virus infections were confirmed in cattle.</p>
<p>Maintenance and extension of two breeding colonies of fruit bats (<i>Rousettus aegyptiacus</i> and <i>Eidolon helvum</i>).</p>	<p>Studies of the immune system of bats and the establishment of permanent bat cell lines are ongoing. Monoclonal antibodies against bat-specific immunoglobulins have been generated and are currently being further characterized. Immunization experiments with a number of viral antigens have been performed for the generation of positive control sera for diagnostic purposes. An immunization experiment has been performed with the Rift Valley Fever Virus (RVFV) vaccine strain MP-12 in <i>Rousettus aegyptiacus</i> bats, which demonstrated the general competence of this species to act as a reservoir host.</p> <p>Further challenge and/or transmission experiments with BSL3 agents (for example highly virulent RVFV) and BSL4 agents are foreseen in the long term</p>

<p>Arthropod vector monitoring and studies of the vector-pathogen interactions</p>	<p>Maintainance of BSL2 and BSL3 insectaries to bred and study invasive and native mosquito species and strains, some tick species and biting midge colony (Culicoides). Current studies involve non-infectious experiments, i.e. on temperature tolerance and development and infectious experiments on vector competence under BSL2 and BSL3 conditions.</p> <p>Passive and active monitoring to gain information about occurrence, distribution and ecology of the different mosquito species in Germany, e.g. "Mücken Atlas", a citizen science project.</p>
<p>Parasites: Toxoplasma gondii Echinococcus multilocularis Besnoitia</p>	<p>Several studies have been performed focussing on Toxoplasma gondii and Echinococcus multilocularis. Other parasites related to T. gondii such as Neospora caninum, Hammondia spp. and Besnoitia spp. have also been worked on. In one study, a high seroprevalence of Toxoplasma gondii and probability of detecting tissue cysts in backyard laying hens compared with hens from large free-range farms was found. Furthermore, experimental infection with three type IIxIII-recombinant Toxoplasma gondii clones resulted in line-dependent mortality in chickens.</p> <p>A comparison of different commercial DNA extraction kits and PCR protocols for the detection of E. multilocularis DNA revealed that none of them was able to remove PCR inhibitors completely. However, combinations of DNA extraction kits and PCR have been found that provide an acceptable diagnostic sensitivity and specificity for the detection of Echinococcus multilocularis eggs in faecal samples from foxes. Moreover, the validation of magnetic-capture DNA extraction protocol in combination with a minor groove-binder real time PCR showed that this protocol is a suitable alternative to Intestinal Scraping Technique in the diagnosis of E. multilocularis in the final host.</p>
<p>Investigations on Campylobacter and Arcobacter in geese and ducks</p>	<p>Studies on the occurrence of C. jejuni and C. coli in geese and duck holdings (stable or free ranging) and on Arcobacter spp. as "new emerging pathogens" in duck and geese stocks are ongoing.</p> <p>Methods for the molecular characterization isolates of different geographical origin were developed and cultivation methods were optimized.</p> <p>Analysis of the antimicrobial resistance of isolates.</p>
<p>Clostridium difficile as potential zoonotic pathogen</p>	<p>Ongoing research on the prevalence of C. difficile in farm animals as well as in pets and their owners as basis for risk assessments. Developing of typing methods for C. difficile in animals.</p>
<p>Drivers of transmission dynamics and spread of antimicrobial resistance genes</p>	<p>Identification of drivers of AMR spread in livestock and at the livestock-human-interface by means of whole genome and resistome analysis and phenotypic assessment of AMR bacterial strains from human and non-human sources (collaborations with medical and veterinary research institutions and services at national and international level)</p>
Wildlife	
Title of activity	Scope
<p>Surveillance of hantaviruses and other pathogens in rodents and other small mammal reservoir hosts</p>	<p>Within the research network "rodent-borne pathogens" the screening of small mammals for hanta-, borna-, adeno- and orthopoxviruses, Leptospira spp., and other bacterial pathogens was continued together with national and international collaborators in Switzerland, Lithuania, Belgium, Spain, Italy, Slovenia, Great Britain, Czech Republic, France, and Poland. Our investigations indicated a broad geographical distribution of Tula hantavirus in voles and rat hepatitis E virus and Leptospira spp. in rats from different European countries. For Puumala hantavirus a limited distribution in bank voles from Germany and Poland was demonstrated.</p>

Animal welfare	
Title of activity	Scope
European Union Reference Centre for Animal Welfare	<p>This first Centre will focus on pig welfare and provide technical support and coordinated assistance to the Member States to carry out official controls on animal welfare. It will also contribute to the dissemination of good practices, as well as carrying out scientific studies, training courses and disseminating research and information on technical innovations.</p> <p>Partners are the Wageningen Livestock Research (Netherlands), the Friedrich-Loeffler-Institut (Germany) and the Department of Animal Science at Aarhus University (Denmark)</p>
Diagnosis, biotechnology and laboratory	
Title of activity	Scope
Francisella tularensis and tularemia in Europe	In the frame of surveillance of tularemia in Europe, Asia and Africa many samples are tested every year. The improvement of serological and molecular tests and the implementation of molecular typing systems is a permanent task to provide new tools that can be used in international control measures
Zoonotic Yersiniae	Yersinia (Y.) Y. pseudotuberculosis and Y. enterocolitica still cause severe illnesses in humans and animals in the EU. New diagnostic assays were established and validated and known detection methods for these pathogens, including Y. pestis which is nowadays likely to be imported to EU via infected animals, food, feed or travelers were improved.
Next-Generation-Sequencing (NGS) and Bioinformatics	<p>MiSeq sequencing has been established. Bioinformatics pipelines for genotyping and outbreak analysis have been implemented and evaluated for Francisella, Campylobacter and Salmonella spp. pipelines are augmented to perform antimicrobial resistance (AMR) analysis and include more zoonotic bacteria</p> <p>Moreover, wet-lab and dry-lab methods for the generic detection of novel/unknown/unexpected pathogens were developed, tested, and optimized.</p>
Vaccines	
Title of activity	Scope
Identification and evaluation of new vaccine candidates for the prevention of zoonotic diseases	<p>Assessing the safety, immunogenicity and efficacy of novel vaccine candidates for vaccinating ruminants against bovine tuberculosis (M. bovis/M. caprae infections) (interdisciplinary research consortium)</p> <p>Methods for the detection of proteins that may be used in vaccine production and new serological diagnostics were implemented and standardized focusing on Coxiella, Brucella and Yersinia spp..</p> <p>For viral zoonotic diseases FLI is collaborating within international research consortia in the development and evaluation of novel vaccine candidates. In 2018 new vaccines against Rift Valley fever (RVFV) infection were designed and tested for efficacy. Novel antibody based therapeutic approaches against RVFV were evaluated.</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
Standardization and validation of glanders diagnostics used for serology	Western blot, ELISA and CFT are tested for their diagnostic specificity and sensitivity to facilitate their use for international trade	<input checked="" type="checkbox"/> Surveillance and control of animal diseases <input type="checkbox"/> Food safety <input type="checkbox"/> Animal welfare
Preparation of antigen for the complement fixation test for dourine diagnosis by in vitro propagation of <i>T. equiperdum</i>	SOP for the preparation of the antigen along with an SOP for the maintenance and cryo-preservation of <i>T. equiperdum</i> strains submitted for consideration for the OIE Manual of Diagnostic Tests and Vaccines by the OIE Biological Standards Commission	<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
Multiple cooperations with other OIE CCs and RLs as well as other organizations	worldwide	<input checked="" type="checkbox"/> Africa <input checked="" type="checkbox"/> Americas <input checked="" type="checkbox"/> Asia and Pacific <input checked="" type="checkbox"/> Europe <input checked="" type="checkbox"/> Middle East	FLI collaborates with multiple collaborating centers, reference laboratories and other organizations from multiple countries to maintain a network and share information on One Health activities.

Institut Pasteur in Guinea,	Conakry, Guinea	<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	<p>Ebola Foresight Study: The Role of Livestock and Wild Animal Species in the Biology of Filoviruses</p> <p>Partners: Sierra Leone Agricultural Research Institute; Njala University in Sierra Leone; Institut Pasteur in Guinea.</p>
ANSES French Agency for Food, Environmental and Occupational Health & Safety	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	<p>OIE-RL Rabies, Chlamydiosis and Brucellosis</p> <p>EU-RL equine diseases</p> <p>several Research projects: e.g. One Health EJP - Promoting One Health in Europe through joint actions on foodborne zoonoses, antimicrobial resistance and emerging microbiological hazards (Horizon2020: 2018-2022; 41 partners)</p>
APHA: Animal and Plant Health Agency	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	<p>OIE-RL Brucellosis, Influenza, TSE, bovine tuberculosis, rabies</p> <p>several Research projects</p>
Canadian Food Inspection Agency (CFIA),	Canada	<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>ongoing Research projects:</p> <p>Biosafety Level 4 Zoonotic Laboratory Network (BSL4ZNet)</p>
Centers for Disease Control and Prevention (CDC), Atlanta	USA	<input type="checkbox"/> Africa <input type="checkbox"/> Americas <input type="checkbox"/> Asia and Pacific <input type="checkbox"/> Europe <input type="checkbox"/> Middle East	<p>Emerging and transboundary diseases, OIE_RL Rabies</p>
Australian Animal Health Laboratory, CSIRO, Geelong, Australia	Geelong, Australia	<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>Harmonization of diagnostic approaches for zoonotic diseases, participation in ring trials for the detection of henipavirus infections organized by AAHL</p>
Harbin Veterinary Research Institute (HVRI) subordinated to the Chinese Academy of Agricultural Sciences (CAAS)	China	<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>Emerging diseases and zoonoses control (High-containment laboratories and animal facilities BSL-3 and BSL-4)</p>

Biosafety Level 4 Zoonotic Laboratory Network (BSL4ZNet)	worldwide	<input checked="" type="checkbox"/> Africa <input checked="" type="checkbox"/> Americas <input checked="" type="checkbox"/> Asia and Pacific <input checked="" type="checkbox"/> Europe <input checked="" type="checkbox"/> Middle East	<p>Global alliance of biosafety level 4 laboratories to optimize how we combat the global threat of diseases that spread from animals to humans. Participation in online trainings and discussions, participation in the BSL4ZNet Decontamination Workshop held in Winnipeg, Canada. Coordinated by the CFIA the network comprises over 60 participants around the world.</p> <p>https://twitter.com/hashtag/BSL4ZNet?src=hash&lang=de</p>
Emerging Viruses Disease Laboratory Network (EVD-LabNet)	Europe	<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>An expert laboratory network for networking, external quality assessments and training of laboratories involved in these activities initiated by ECDC and coordinated by Erasmus MC:</p> <p>The network focuses on virus families and genera that are rare, imported and (re)emerging in EU/EEA countries. These include the genera Alphavirus, Bornavirus, Calicivirus, Coronavirus, Flavivirus, Henipavirus, Picornavirus and the families Arenaviridae, Bunyaviridae, Filoviridae, Poxviridae, Paramyxoviridae, Reoviridae and Rhabdoviridae. Risk class 4 pathogens are a primary focus of the EMERGE network</p> <p>www.evd-labnet.eu/index.php#background-evd-labnet</p>
EMERGE consortium (EU funded Joint Action, Health Programme)	Europe	<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>Efficient response to highly dangerous and emerging pathogens at EU level It contributes to an integrated European laboratory infrastructure and strategy to protect European citizens against exposure to a panel of globally recognized high threat bacteria and viruses (risk group 3 bacteria and 4 viruses). Coordinated by the RKI, Germany, the network comprises about 40 diagnostic laboratories.</p> <p>https://www.emerge.rki.eu/Emerge/EN/Home/Homepage_node.html</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
Pirbright Institute	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	<p>MoU - Strategic cooperation including joint PhD-programme on topics of common interest. Transboundary diseases, (re-)emerging animal diseases, vector competence studies, poultry immunology)</p> <p>OIE-RL AHS, BT, ASF, CSF, FMD, SVD, Lumpy skin disease, PPR,RP, sheep and goat pox</p>

DELTA-FLU Consortium (Horizon 2020)	Europe, worldwide	<input type="checkbox"/> Africa <input checked="" type="checkbox"/> Americas <input checked="" type="checkbox"/> Asia and Pacific <input checked="" type="checkbox"/> Europe <input type="checkbox"/> Middle East	"Dynamics of avian influenza in a changing world" aims at elucidating the mechanisms of bird flu. It will bundle its expertise in different research fields to promote strategies for the prevention and control of this disease. Horizon 2020: SC2 SFS-14-2016 - Understanding host-pathogen-environment interactions; 10 Partner (2017-2022) Coordinator: FLI, Germany
Compare Consortium (Horizon 2020)	Europe	<input type="checkbox"/> Africa <input type="checkbox"/> Americas <input type="checkbox"/> Asia and Pacific <input checked="" type="checkbox"/> Europe <input type="checkbox"/> Middle East	Collaborative Management Platform for detection and Analyses of (Re-)emerging and foodborne outbreaks in Europe Horizon 2020: SC1 HEALTH RIA Research and Innovation action, 29 Partner (2014-2019); http://www.compare-europe.eu/
EVAg Consortium (Horizon 2020)	Europe, worldwide	<input checked="" type="checkbox"/> Africa <input checked="" type="checkbox"/> Americas <input checked="" type="checkbox"/> Asia and Pacific <input checked="" type="checkbox"/> Europe <input checked="" type="checkbox"/> Middle East	INFRASTRUCTURES RIA - Research and Innovation action 25 Partner (2015-2019) European Virus Archive goes global; https://www.european-virus-archive.com
VetBioNet (Horizon 2020)	Europe	<input type="checkbox"/> Africa <input type="checkbox"/> Americas <input type="checkbox"/> Asia and Pacific <input checked="" type="checkbox"/> Europe <input type="checkbox"/> Middle East	Veterinary Biocontained facility Network for excellence in animal infectiology research and experimentation Horizon 2020: INFRAIA-01-2016-2017 - 19 Partner (2017-2020); http://www.vetbionet.eu
One Health EJP - (Horizon2020)	Europe	<input type="checkbox"/> Africa <input type="checkbox"/> Americas <input type="checkbox"/> Asia and Pacific <input checked="" type="checkbox"/> Europe <input type="checkbox"/> Middle East	One Health EJP - Promoting One Health in Europe through joint actions on foodborne zoonoses, antimicrobial resistance and emerging microbiological hazards (Horizon2020: 2018-2022; 41 partners)
Aedes Invasive Mosquitoes (AIM-COST)	Europe	<input type="checkbox"/> Africa <input type="checkbox"/> Americas <input type="checkbox"/> Asia and Pacific <input checked="" type="checkbox"/> Europe <input type="checkbox"/> Middle East	Establishment of a transboundary network across Europe to cost effectively address the management of the risk of introduction and spread of Exotic Invasive Aedes Mosquito Borne Viruses. COST Action CA17108: Partners from 19 countries (2018-2022)
China Animal Health and Epidemiology Centre (CAHEC)	Qingdao, China	<input type="checkbox"/> Africa <input type="checkbox"/> Americas <input checked="" type="checkbox"/> Asia and Pacific <input type="checkbox"/> Europe <input type="checkbox"/> Middle East	MoU Emerging diseases and zoonoses control

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
FLI scientists	FLI experts are available to the OIE at any time for consultation.	Zoonoses and animal diseases, including aquatic diseases. Furthermore, FLI can provide consultancy in the areas of animal welfare, animal feeding and farm animal genetics.
Prof. H. Neubauer	Co-Author: OIE Terrestrial Manual and Terrestrial Code	Chapter on infection with <i>Brucella abortus</i> , <i>B. melitensis</i> and <i>B. suis</i> (OIE-Manual Diagnostic Tests and Vaccines for Terrestrial Animals) Chapters on Glanders (OIE-Manual Diagnostic Tests and Vaccines for Terrestrial Animals and Terrestrial Animal Health Code)
Dr. Thomas Müller	Chairman of OIE ad hoc Group	Revision of the Chapter 8.14. Infection with rabies virus OIE Terrestrial Animal Health Code OIE Sub-Regional Seminar on Rabies, for SADC Countries Windhoek, Namibia 10 - 12 April 2018 Namibia Rabies Control Strategy Towards Dog-Mediated Human Rabies Elimination, Programme Meeting Ondangwa, 4-5 December 2018
Dr. Thomas Müller	WHO Expert Consultation on Rabies, 24-27 April 2017, Bangkok, Thailand	Revision of WHO's Laboratory techniques in rabies (LTR) edition Organization of the meeting and drafting of the agenda on behalf of WHO
Prof. T. Harder	Joint FAO/IAEA Programme Vetlab network (CRP D32032)	Standard reference materials and ring trial to ensure quality in diagnosis of notifiable AIV
Prof. T. Harder	Joint FAO/IAEA Programme (CRP D32034 (CCRA NA1R02/18)	Field visit and seminars on AI surveillance and diagnosis in wild birds, Novosibirsk, Russia. (25 - 31 August, 2018) in the frame of "The Use of Stable Isotopes to Trace Bird Migrations and Molecular Nuclear Techniques to Investigate the Epidemiology and Ecology of the Highly Pathogenic Avian Influenza (CRP D32034 (CCRA NA1R02/18)"

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: 4
 b) Seminars: 1
 c) Hands-on training courses: 6
 d) Internships (>1 month): 12

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	Workshop "Practical training on Filovirus Detection: PCR and sequencing" for capacity building (May 2018, 5 days)	Guinea	4
a	Workshop "Practical training on Filovirus Detection: PCR and sequencing" for capacity building (June 2018, 5 days)	Sierra Leone	10
a	Workshop on serological and molecular diagnostic techniques for Q fever in ruminants, Brucellosis, CCHF (November 2018, 1 week)	Egypt	25
a + b	Diagnostic support and training on Q fever during an outbreak of abortions in cattle and associated atypical pneumonia in cattle workers in the south of Chile. (March 2018, 1 week)	Chile	5
c	Training course on PCR for zoonotic diseases (March 2018, 4 days)	Denmark, Lithuania	2
c	Training course for diagnosis of Brucellosis and Q-fever (April 2018, 2 weeks)	Egypt	2
c	Training course for diagnosis of Brucellosis (June 2018, 1 week)	Bangladesh	1
c	Training course for Diagnosis of Brucellosis and Glanders (July 2018, 1 week)	Ukraine	3
c	Molecular diagnosis of chlamydiae in cases of bovine abortion (October 2018, 1 week)	Denmark	1
c	Training course "Anthrax and Biosafety" (October 2018, 10 days)	Ukraine	2
c	Training course for serological diagnosis of Brucellosis (October/November 2018, 4 week)	Pakistan	2
c	Training course for diagnosis of Brucellosis and Q-fever (October 2018, 4 days)	Egypt	4

d	Internship-CAHEC (November 2018 - February 2019, 3 months): Diagnosis, microbiology and epidemiology of zoonotic bacterial agents (Chlamydia, Coxiella, Mycobacteria et al.) and Veterinary epidemiology. Biosafety training and biorisk management in high containment laboratories and experimental animal facilities.	China	2
d	Molecular Epidemiology of Avian and Swine Influenza in Nigeria; Mapping intra- and inter-species gene reassortment (09/2016 - 08/2018)	Nigeria	2
d	“Serological Assays for the Detection of Ebolavirus Specific Antibodies” and “Molecular diagnosis Filovirus: PCR and sequencing” (Internship of PhD-Students: March-May 2018, 1 month)	Guinea and Sierra Leone	2
d	Development of Brucella specific diagnostics (December 2018, 1 month)	Palestine	1

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	A decade of freedom from terrestrial rabies in Germany - Scientific Symposium on Rabies Research commemorating World Rabies Day. Deutschland	Friedrich-Loeffler-Institut (FLI) together with the Worldorganisation of Health (WHO), World Organisation for Animal Health (OIE) and the Food and Agriculture Organization of the United Nations (FAO)	09/18	Greifswald, Germany	60
international	OIE Sub-Regional Seminar on Rabies, for SADC Countries	World Organisation for Animal Health (OIE); Friedrich-Loeffler-Institut (FLI); Namibian Ministry of Agriculture, Water and Forestry	04/18	Windhoek, Namibia	50

international	Namibia Rabies Control Strategy Towards Dog-Mediated Human Rabies Elimination, Programme Meeting	World Organisation for Animal Health (OIE); Friedrich-Loeffler-Institut (FLI); Namibian Ministry of Agriculture, Water and Forestry	12/18	Ondangwa, Namibia	20
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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: 340

b) International conferences: 100

Each year, FLI researchers present at numerous international conferences.

c) National conferences: 100

Each year, FLI researchers present at numerous national conferences.

d) Other

(Provide website address or link to appropriate information): 4

Website of the Friedrich-Loeffler-Institut, including general information and actual information on animal diseases (www.fli.de)

Radar Bulletin Germany - it compiles and evaluates information on the global situation and on the spread of the most important animal diseases which are relevant for Germany and Switzerland.

<https://www.fli.de/en/publications/radar-bulletin-germany/>

Rabies - Bulletin - Europe: Rabies Information System of the WHO (www.who-rabies-bulletin.org/)

German Research Platform for Zoonoses - an information and service network, funded by the Federal Ministry of Education and Research (BMBF), for all working groups operating in Germany in the field of zoonoses research (www.zoonosen.net/Default.aspx?tabid=1275)