OIE Collaborating Centres Reports Activities

Activities in 2021

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Title of collaborating centre:	Food-Borne Parasites from the Asia-Pacific Region
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Name (including Title and Position) of Head of the Collaborating Centre (formally OIE Contact Point):	Liu Mingyuan,Ph.D Director of Institute of Zoonosis Jilin University
Name of writer:	Xuelin Wang and Yang Wang

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**
Immunological and serological diagnosis for Trichinella spiralis, Clonorchis sinensis, Toxoplasma and Cryptopsoridium	Farm pigs,dogs, pet cats in China
Cystatin-like protein of Trichinella spiralis for serodiagnosis and identification of immunodominant epitopes	Farm pigs and mice in China
Identification and genetic characterization of Anisakidae	Fish in Southeast Asia
Characterization of exosome-like vesicles derived from Taenia pisiformis cysticercus	Farm pigs in China
Isolation and characterization of Toxoplasma gondii from captive caracals	Caracals in Southeast Asia
Epidemiology, surveillance, risk assessment, modelling	
Title of activity	**Scope**
Prevalence of meat-transmitted Taenia and Trichinella parasites in the Far East countries	meat-transmitted Taenia and Trichinella parasites
Analysis of Codon Usage Patterns in Giardia duodenalis Based on Transcriptome Data from GiardiaDB	Giardia duodenalis
Training, capacity building	
Title of activity	**Scope**
Training for staff of Yunnan Institute of Parasitic Diseases	Work in Yunnan Institute of Parasitic Diseases of China

Zoonoses	
Title of activity	**Scope**
Trypanosoma evansi evades host innate immunity by releasing extracellular vesicles to activate TLR2-AKT signaling pathway	Trypanosoma evansi
Effects of Trichinella spiralis and its excretory/secretory products on autophagy of host muscle cells in vivo and in vitro	Trichinella spiralis
The dynamics of select cellular responses and cytokine expression profiles in mice infected with juvenile Clonorchis sinensis	Clonorchis sinensis
MicroRNA profiling of Neospora caninum tachyzoites (NC-1) using a high-throughput approach	Neospora caninum
Protective Immunity Against Neospora caninum Infection Induced by 14-3-3 Protein in Mice	Neospora caninum
Aquatic animal diseases	
Title of activity	**Scope**
A Single-Pass Type I Membrane Protein from the Apicomplexan Parasite Cryptosporidium parvum with Nanomolar Binding Affinity to Host Cell Surface	Cryptosporidium parvum
Unique Tubulin-Based Structures in the Zoonotic Apicomplexan Parasite Cryptosporidium parvum	Cryptosporidium parvum
Animal welfare	
Title of activity	**Scope**
Animal health product consulation	Prof Liu Mingyuan,Wang Xuelin and Liu Zengshan worked in OIE Collaborating Center for Food-borne Parasites from Asian-Pacific Region serve for farm animal and pets
Diagnosis, biotechnology and laboratory	
Title of activity	**Scope**
Host defense against Neospora caninum infection via IL-12p40 production through TLR2/TLR3-AKT-ERK signaling pathway in C57BL/6 mice	Neospora caninum
Comparative analysis of excretory-secretory products of muscle larvae of three isolates of Trichinella pseudospiralis by the iTRAQ method	Trichinella pseudospiralis
Development of a rapid and sensitive immunochromatographic strip based on EuNPs-ES fluorescent probe for the detection of early Trichinella spiralis-specific IgG antibody in pigs	Trichinella spiralis
Rapid Quantum Dot Nanobead-mAb Probe-Based Immunochromatographic Assay for Antibody Monitoring of Trichinella spiralis Infection	Trichinella spiralis

Recombinant cystatin-like protein-based competition ELISA for Trichinella spiralis antibody test in multihost sera	Trichinella spiralis
Vaccines	
Title of activity	**Scope**
Adjuvanticity of beta -Glucan for Vaccine Against Trichinella spiralis	Trichinella spiralis
The immune protection induced by a serine protease from the Trichinella spiralis adult against Trichinella spiralis infection in pigs	Trichinella spiralis
Vaccination with a DNase II recombinant protein against Trichinella spiralis infection in pigs	Trichinella spiralis
Food safety	
Title of activity	**Scope**
Molecular characterization of Cryptosporidium spp. and Giardia duodenalis in dairy cattle	In China
Primary characterization of the immune response in pigs infected with Trichinella spiralis	In China

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
Collaboration with OIE Reference Laboratories	Members of OIE	☒Surveillance and control of animal diseases ☒Food safety ☒Animal welfare
Coordinate scientific and technical studies in collaboration with other centres, laboratories or organisations	Members of OIE	☒Surveillance and control of animal diseases ☒Food safety ☒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
OIE CC for Food-borne Parasites in European	France	☐Africa ☐Americas ☐Asia and Pacific ☒Europe ☐Middle East	Cooperation in controlling foodbornezoonotic parasite
OIE CC for Food-borne Parasites in North America	Canada	☐Africa ☒Americas ☐Asia and Pacific ☐Europe ☐Middle East	Cooperation in parasite epidemiology

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
Liu Mingyuan	Parasitosis morphology diagnosis,serology diagnosis, molecular typing diagnosis. Surveillance of epidemiology.	Nematodes□trematodes□cestodes and protozoan

Wang Xuelin	Parasitosis morphology diagnosis,serology diagnosis, molecular typing diagnosis.	Trichinella sp□Anisakidae□Clonorchis,Cysticercus ,Toxoplasma□Cryptosporidium and Giardia
Zhu Guan	Parasitosis morphology diagnosis,serology diagnosis, molecular typing diagnosis.	Nematodes□trematodes□cestodes and protozoan
Pascal Boireau	Parasitosis morphology diagnosis,serology diagnosis, molecular typing diagnosis.	Nematodes□trematodes□cestodes and protozoan
Xiao lei Liu	Parasitosis morphology diagnosis,serology diagnosis, molecular typing diagnosis.	Nematodes
Yang Wang	Epidemiology	Nematodes
Jing Ding	Parasitosis morphology diagnosis,serology diagnosis.	Trematodes□cestodes and protozoan

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?

No

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?

No

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: 26

1.Liu Y, Liu X, Yang L, Qiu Y, Pang J, Hu X, Dong Z, Liu Z, Jin X. Adjuvanticity of β -Glucan for Vaccine Against Trichinella spiralis. Front Cell Dev Biol. 2021 Jul 12;9:701708.
2.Wang Y, Bai X, Tang B, Zhang Y, Zhang L, Cai X, Lin J, Jia W, Boireau P, Liu M, Liu X. Comparative analysis of excretory-secretory products of muscle larvae of three isolates of Trichinella pseudospiralis by the iTRAQ method. Vet Parasitol. 2021 Sep;297:109119.
3.Liu X, Feng Y, Bai X, Wang X, Qin R, Tang B, Yu X, Yang Y, Liu M, Gao F. Comparative multi-omics analyses reveal differential expression of key genes relevant for parasitism between non-encapsulated and encapsulated Trichinella. Commun Biol. 2021 Jan 29;4(1):134
4.Wang X, Tang B, Zhao Y, Ding J, Wang N, Liu Y, Dong Z, Sun X, Xu Q, Liu M, Liu X. Development of a rapid and sensitive immunochromatographic strip based on EuNPs-ES fluorescent probe for the detection of early Trichinella spiralis-specific IgG antibody in pigs. Vet Res. 2021 Jun 11;52(1):85.
5.Li C, Bai X, Liu X, Zhang Y, Liu L, Zhang L, Xu F, Yang Y, Liu M. Disruption of Epithelial Barrier of Caco-2 Cell Monolayers by Excretory Secretory Products of Trichinella spiralis Might Be Related to Serine Protease. Front Microbiol. 2021 Mar 17;12:634185.
6.Hu X, Liu X, Bai X, Yang L, Ding J, Jin X, Li C, Zhang Y, Li Y, Yang Y, Liu M. Effects of Trichinella spiralis and its excretory/secretory products on autophagy of host muscle cells in vivo and in vitro. PLoS Negl Trop Dis. 2021 Feb 18;15(2):e0009040.
7.Jin X, Yang Y, Ding J, Liu X, Shi H, Luo X, Jia W, Cai X, Vallee I, Boireau P, Bai X, Liu M. Nod-like receptor pyrin domain containing 3 plays a key role in the development of Th2 cell-mediated host defenses against Trichinella spiralis infection. Vet Parasitol. 2021 Sep;297:109159.
8.Jin X, Bai X, Zhao Y, Dong Z, Pang J, Liu M, Liu X. Nrf2 Participates in M2 Polarization by Trichinella spiralis to Alleviate TNBS-Induced Colitis in Mice. Front Immunol. 2021 Jun 23;12:698494.
9.Liu Y, Dong Z, Pang J, Liu M, Jin X. Prevalence of meat-transmitted Taenia and Trichinella parasites in the Far East countries. Parasitol Res. 2021 Dec;120(12):4145-4151.
10.Xu N, Liu Y, Li Y, Tang B, Liang X, Yang Y, Liu M, Liu X, Zhou Y. Rapid Quantum Dot Nanobead-mAb Probe-Based Immunochromatographic Assay for Antibody Monitoring of Trichinella spiralis Infection. Int J Nanomedicine. 2021 Mar 29;16:2477-2486.
11.Liu Y, Xu N, Li Y, Tang B, Yang H, Gao W, Liu M, Liu X, Zhou Y. Recombinant cystatin-like protein-based competition ELISA for Trichinella spiralis antibody test in multihost sera. PLoS Negl Trop Dis. 2021 Aug 25;15(8):e0009723.
12.Xu N, Bai X, Liu Y, Yang Y, Tang B, Shi HN, Vallee I, Boireau P, Liu X, Liu M. The Anti-Inflammatory Immune Response in Early Trichinella spiralis Intestinal Infection Depends on Serine Protease Inhibitor-Mediated Alternative Activation of Macrophages. J Immunol. 2021 Mar 1;206(5):963-977.
13.Wang N, Bai X, Jin X, Tang B, Yang Y, Sun Q, Li S, Wang C, Chang Q, Liu M, Liu X. The dynamics of select cellular responses and cytokine expression profiles in mice infected with juvenile Clonorchis sinensis. Acta Trop. 2021 May;217:105852.
14.Xu D, Bai X, Xu J, Wang X, Dong Z, Shi W, Xu F, Li Y, Liu M, Liu X. The immune protection induced by a serine protease from the Trichinella spiralis adult against Trichinella spiralis infection in pigs. PLoS Negl Trop Dis. 2021 May 10;15(5):e0009408.
15.Hu X, Liu X, Li C, Zhang Y, Li C, Li Y, Chen Y, Guo H, Bai X, Liu M. Time-resolved transcriptional profiling of Trichinella-infected murine myocytes helps to elucidate host-pathogen interactions in the muscle stage. Parasit Vectors. 2021 Mar 1;14(1):130.
16.Wang N, Bai X, Ding J, Lin J, Zhu H, Luo X, Fu Z, Zhu C, Jia H, Liu M, Liu X. Trichinella infectivity and antibody response in experimentally infected pigs. Vet Parasitol. 2021 Sep;297:109111.
17.Li J, Ding J, Liu XL, Tang B, Bai X, Wang Y, Qiao WD, Liu MY, Wang XL. Upconverting phosphor technology-based lateral flow assay for the rapid and sensitive detection of anti-Trichinella spiralis IgG antibodies in pig serum. Parasit Vectors. 2021 Sep 22;14(1):487.
18.Xu D, Tang B, Yang Y, Cai X, Jia W, Luo X, Yan H, Zhang Z, Lin J, Liu M, Liu X. Vaccination with a DNase II recombinant protein against Trichinella spiralis infection in pigs. Vet Parasitol. 2021 Sep;297:109069.
19.Zhang T, Gao X, Wang D, Zhao J, Zhang N, Li Q, Zhu G, Yin J. A Single-Pass Type I Membrane Protein from the Apicomplexan Parasite Cryptosporidium parvum with Nanomolar Binding Affinity to Host Cell Surface. Microorganisms. 2021 May 8;9(5):1015.
20.Liu G, Jia L, Shao Q, Lu H, Zhao J, Yin J. MicroRNA profiling of Neospora caninum tachyzoites (NC-1) using a

high-throughput approach. Parasitol Res. 2021 Jun;120(6):2165-2174.
21.Wang C, Wang D, Nie J, Gao X, Yin J, Zhu G. Unique Tubulin-Based Structures in the Zoonotic Apicomplexan Parasite Cryptosporidium parvum. Microorganisms. 2021 Sep 10;9(9):1921.
22.Yang J, Sun L, Hui S, Zhang P, Li J, Wang D, Wang X, Jiang S. Ag functionalized SnS2 with enhanced photothermal activity for safe and efficient wound disinfection. Biomater Sci. 2021 Jul 7;9(13):4728-4736.
23.Feng Y, Liu X, Liu Y, Tang B, Bai X, Li C, Wang X, Deng Y, Gao F, Liu M. Comparative Epigenomics Reveals Host Diversity of the Trichinella Epigenomes and Their Effects on Differential Parasitism. Front Cell Dev Biol. 2021 Jun 11;9:681839.
24.Li X, Wang X, Gong P, Zhang N, Zhang X, Li J. Analysis of Codon Usage Patterns in Giardia duodenalis Based on Transcriptome Data from GiardiaDB. Genes (Basel). 2021 Jul 29;12(8):1169.
25.Zhang X, Li X, Gong P, Wang X, Zhang N, Chen M, Zhang X, Li J. Host defense against Neospora caninum infection via IL-12p40 production through TLR2/TLR3-AKT-ERK signaling pathway in C57BL/6 mice. Mol Immunol. 2021 Nov;139:140-152.
26.Wei R, Li X, Wang X, Zhang N, Wang Y, Zhang X, Gong P, Li J. Trypanosoma evansi evades host innate immunity by releasing extracellular vesicles to activate TLR2-AKT signaling pathway. Virulence. 2021 Dec;12(1):2017-2036.

b) International conferences: 0

c) National conferences: 0

d) Other
(Provide website address or link to appropriate information): 0

9. Additional comments regarding your report: