

WOAH Collaborative Centre Reports Activities 2022

Activities in 2022

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Centre Information

Title of WOA Collaborating Centre	Food-Borne Parasites from the Asia-Pacific Region
Address of WOA Collaborating Centre	Ministry of Education Institute of Zoonosis Jilin University 5333 Xian Road 130062 Changchun CHINA (PEOPLES REP. OF)
Tel.:	8613019125996 or 8613943013352
E-mail address:	liumy@jlu.edu.cn or xuelin@jlu.edu.cn
Website:	none
Name Director of Institute (Responsible Official):	Liu Minyuan and Xuelin Wang, Ministry of Education Institute of Zoonosis Jilin University 5333 Xian Road 130062 Changchun CHINA
Name (including Title and Position) of Head of the Collaborating Centre (WOAH Contact Point):	Liu Minyua and Xuelin Wang, Ph.D. Director of Institute of Zoonosis Jilin University
Name of the writer:	xuelin wang and yang wang

TOR1 AND 2: SERVICES PROVIDED

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

Disease control	
Title of activity	Scope
Serological diagnosis for Trichinella spiralis, Clonorchis	

sinensis, Toxoplasma and Cryptosporidium; Prokaryotic expression and site detected antigen gene of Trichinella spiralis; Antigen gene characterization of Trichinella spiralis and Clonorchis sinensis; Strategy and policy stipulation for prevention of Trichinella spiralis, Clonorchis sinensis, Toxoplasma and Cryptosporidium; Detection of Trichinella spiralis infection by surface enhanced Raman spectroscopy combined with multivariate analysis;	Farm pigs,dogs, pet cats in China
Epidemiology, surveillance, risk assessment, modelling	
Title of activity	Scope
Development of genome-wide-based polymorphic microsatellite markers and phylogenetic analysis of Trichinella spiralis in Chinese population	For mouse and human
Training, capacity building	
Title of activity	Scope
280 permanent staffs of training	Work in animal CDC of Asia
Zoonoses	
Title of activity	Scope
Glutathione-S-transferase of Trichinella spiralis regulates maturation and function of dendritic cells; ROP9, MIC3, and SAG2 are heparin-binding proteins in Toxoplasma gondii and involved in host cell attachment and invasion; Identification and characterization of Letm1 gene in Toxoplasma gondii;	Trichinella spiralis and Toxoplasma gondii
Avian diseases	
Title of activity	Scope
Viral RNA-based transfection and expression of enhanced green fluorescent protein in the parasitic protozoan Eimeria stiedae	For the chicken
Aquatic animal diseases	
Title of activity	Scope
A novel detection method of Cryptosporidium parvum infection in cattle based on Cryptosporidium parvum virus 1	Cryptosporidium

Animal welfare	
Title of activity	Scope
Animalhealth product consultation	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
The roles of serine protease-like protein from the new-born larvae stage of <i>Trichinella spiralis</i> in regulating collagen synthesis and differentiation on C2C12 myoblasts in vitro; Characterization of antigenic properties of a cystatin-like protein of <i>Trichinella spiralis</i> at its early invasion stage; Activity, infectivity and antibody dynamics response against <i>Trichinella spiralis</i> in experimentally infected pigs; Serine protease inhibitor of <i>Trichinella spiralis</i> induced a process of early anti-inflammatory immune response dependent on macrophages alternative activation in vivo; The NLRP3 play a critical role in development of Th2 cellmediated protective immune response against <i>Trichinella spiralis</i> infection.	For the <i>Trichinella spiralis</i>
Vaccines	
Title of activity	Scope
Vaccination with recombinant adenoviruses expressing <i>Toxoplasma gondii</i> MIC3, ROP9, and SAG2 provide protective immunity against acute toxoplasmosis in mice; Vaccination with DNase II recombinant protein against <i>Trichinella spiralis</i> infection in pigs;	For mouse,pig and human
Food safety	
Title of activity	Scope
Antigenic and functional genes in <i>Trichinella</i> spp. today	In China

TOR3: HARMONISATION OF STANDARDS

2. Proposal or development of any procedure that will facilitate harmonisation of international regulations applicable to the main focus area for which you were designated

Proposal title	Scope/Content	Applicable area

Sharing experience of internet on One Health approach in all member of OIE	Members of OIE	Training and education Veterinary products Wildlife health and biodiversity
Sharing train standard stipulation	Members of OIE	Laboratory expertise Animal production Veterinary products

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

TOR4 AND 5: NETWORKING AND COLLABORATION

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

No

TOR6: EXPERT CONSULTANTS

6. Did your Collaborating Centre place expert consultants at the disposal of WOAHA?

TOR7: SCIENTIFIC AND TECHNICAL TRAINING

7. Did your Collaborating Centre provide advice/services to requests from Members in your main focus area?

No

8. Did your Collaborating Centre provide scientific and technical training, within the remit of the mandate given by WOAHA, to personnel from WOAHA Members?

Yes

a) Technical visit : 0

b) Seminars : 3

c) Hands-on training courses: 0

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
Seminars	International multilateral cooperation between OIE reference Centres	France	3

TOR8: SCIENTIFIC MEETINGS

9. Did your Collaborating Centre organise or participate in the organisation of scientific meetings related to your main focus area on behalf of WOA?H?

TOR9: DATA AND INFORMATION DISSEMINATION

10. Publication and dissemination of any information within the remit of the mandate given by WOA?H that may be useful to Members of WOA?H

a) Articles published in peer-reviewed journals:

[1] 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. doi: 10.1186/s13071-021-04949-2. PMID: 34551787; PMCID: PMC8456594.

[2] Sun L, Bai H, Jiang H, Zhang P, Li J, Qiao W, Wang D, Liu G, Wang X. MoS₂/LaF₃ for enhanced photothermal therapy performance of

[3] poorly-differentiated hepatoma. *Colloids Surf B Biointerfaces*. 2022 Mar 16;214:112462. doi: 10.1016/j.colsurfb.2022.112462. Epub ahead of print. PMID: 35349941.

[4] 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. doi: 10.1039/d1bm00429h. Epub 2021 May 25. PMID: 34032227.

[5] Liu X, Liu Y, Jin X, He Z, Huang Z, Sun S, Gao Y, Li J, Ning Q, Xie Z, Jin N, Liu M. Rapidly developable therapeutic-grade equine immunoglobulin against the SARS-CoV-2 infection in rhesus macaques. *Signal Transduction and Targeted Therapy*. 2022 Jul 7;7(1):219.

[6] Jin X, Liu Y, Vallee I, Karadjian G, Liu M, Liu X. Lentinan-triggered butyrate-producing bacteria drive the expulsion of the intestinal helminth *Trichinella spiralis* in mice. *Front Immunol*. 2022 Jul 28;13:926765

[7] Shi W, Xu N, Wang X, Vallée I, Liu M, Liu X. Helminth Therapy for Immune-Mediated Inflammatory Diseases: Current and Future Perspectives. *J Inflamm Res*. 2022 Jan 21;15:475-491.

[8] Xiuqin Chen, Lianjing Zhao, Jiahui Wang, Haolu Wang, Yangyuan Qiu, Zijian Dong, Chunling Zhang, Mingyuan Liu, Xuelin Wang, Xue Bai, Rapid visual detection of anisakid nematodes using recombinase polymerase amplification and SYBR Green I, *Front Microbiol*, 02 December 2022

[9] Jin X, Liu Y, Wang J, Wang X, Tang B, Liu M*, Liu X*. β -Glucan-triggered *Akkermansia muciniphila* expansion facilitates the expulsion of intestinal helminth via TLR2 in mice. *Carbohydr Polym*. 2022 Jan 1;275:118719.

[10] Xin Gao, Yong Yang, Xiaolei Liu, Fengyan Xu, Yang Wang, Lei Liu, Yaming Yang, Mingyuan Liu, Xue Bai; Extracellular vesicles from *Trichinella spiralis*: Proteomic analysis and protective immunity. *PLoS Negl Trop Dis* 16(6):e0010528.

b) International conferences:

no

c) National conferences:

no

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

no

11. What have you done in the past year to advance your area of focus, e.g. updated technology?

1. Multi-centre study on *Echinococcus multilocularis* and *Echinococcus granulosus* s.l. in Europe development and harmonization of diagnostic methods in the food chain, Budget: 3,000,000 RMB; Date: 2022.07-2025.06; Supported by the National Key Research and Development Program of China - intergovernmental cooperation of science and technology

2. TOXOSOURCES – *Toxoplasma gondii* sources quantified, Budget: 3,000,000 RMB; Date: 2022.07-2025.06; Supported by the National Key Research and Development Program of China - intergovernmental cooperation of science and technology

3. *PARADISE: Parasite Detection, Isolation and Evaluation, Budget: 3,000,000 RMB; Date: 2022.07-2025.06; Supported by the National Key Research and Development Program of China - intergovernmental cooperation of science and technology*
4. *Study on source prevention, control and blocking technology of key zoonotic parasitic diseases in livestock and poultry., Budget: 17,000,000 RMB; Date: 2017.17-2020.12; Supported by National Key R&D Program of China*
5. *study and exploration on specific and highly sensitive detection and confirmation technology of foodborne parasites, Budget: 2,550,000 RMB; Date: 2017.17-2020.12; Supported by National Key R&D Program of China*
6. *Explore study on isolation, identification and mechanism of key immunosuppressive proteins of Trichinella spiralis . Budget: 2,490,000 RMB; Date: 2016.01-2020.12; Supported by NSFC-International cooperation project*

12. Additional comments regarding your report:

No