LinkTADs

D4.2 Workshop Report

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01.

Workshop summary

Workshop summary

As one of the WP4 tasks, the LinkTADs WP4 2nd Workshop on Vaccine and Diagnostic Technology Development on Transboundary Animal Diseases and Zoonoses jointly organized by FAO, HVRI and SHVRI was held in Shanghai on October 17, 2014. The main objective of the workshop was to strengthen the collaborations among partners on diagnostic technologies and vaccine development in EU and China, with special emphasis on the linkage between epidemiology and laboratory research in the prevention and control of important animal diseases and zoonoses for both EU and China.

During the one-day workshop, 45 participants including scientists, experts and students from 19 institutions from China and Europe attended the workshop. With respect to the gender distribution, 46.7% of the participants were female. Fourteen delegates, including four invited speakers from Europe outside the consortium, presented their research progress, covering the following diseases:

- Transboundary animal diseases (TADs): African swine fever (ASF), pseudorabies, porcine reproductive and respiratory syndrome (PRRS), blue tongue disease and vector-borne diseases.
- Zoonoses: rabies, Japanese encephalitis, brucellosis and tuberculosis.

Dr. Hua-Ji Qiu from HVRI made the opening address, introducing the LinkTADs project and the objectives of the workshop, and extended thanks to the efforts of partners to make the workshop happen.

Session on control of zoonoses chaired by Dr. Zhiyong Ma from SHVRI

- Dr. Alessio Lorusso gave an overview of the work done at IZSAM on a whole range of different vector-borne viruses, including bluetongue, as well as on work done on coronaviruses and novel viruses from bats. He stressed what we can learn from sequencing these viruses about their origin, their evolution, vaccine development, etc. as well as their fast identification and characterization.
- Dr. Jose Maria Blasco from CITA presented an overview of the challenges of brucellosis diagnosis and how to deal with the huge number of available diagnostic tools and how to choose a best laboratory diagnostic strategy for each scenario. Also, the vaccination challenges and strategies were discussed, including the performance of different vaccines and how the traditional vaccines S19 and Rev1 is still the best vaccine in the market despite efforts to develop new ones.
- Dr. Ling Zhao from HZAU presented on the challenges of rabies control in China, which is a re-emerging problem, particularly in rural areas, where vaccination is more challenging. He presented the work done to generate new, more effective vaccines, e.g. subunit vaccines, but specifically the promising results developing a recombinant reverse genetic vaccine.

Session on linking laboratory research with epidemiology chaired by Dr. Fusheng Guo from FAO China

On behalf of FAO China, Dr. Fusheng Guo pointed out that the strength of the project is to link the epidemiology and laboratory work, which is the core of the project's objectives.

- Dr. Ningning Song from HVRI presented on overview on bovine tuberculosis and the current epidemiological surveys
- Dr. Julien Cappelle from CIRAD explored how ecological and epidemiological methods for investigations on animal diseases can be integrated. Specifically, he used two examples on how the combined use of epidemiology, ecology and virology tools aided to better understand the role played by wild birds in the maintenance and spread of H5N1 HPAI in China and of Newcastle disease in Africa.
- Dr. Ana Mateus from RVC reviewed a number of examples of the use of integrated strategies, e.g. foot and mouth disease (FMD) in South America, evaluation of interventions in live bird markets in Viet Nam, bovine spongiform encephalopathy (BSE) in the United Kingdom.

Session on control of swine diseases chaired by Dr. Lihong Liu from SVA

- Dr. Linda Dixon from TPI presented the peculiarities that make so challenging to develop a vaccine against African swine fever virus (ASFV), e.g. its structure, replication, pathogenic systems and evasion systems. There are ongoing efforts to produce an effective and safe vaccine through the two main approaches, live attenuated vaccines and subunit vaccines, but still some years before a successful one is developed and available in the market.
- Dr. José Manuel Sanchez-Vizcaino from UCM presented the challenges that China may face regarding each step in the prevention, detection and response process to an eventual African swine fever (ASF) outbreak, and the need to be alert and prepared. He stressed the need to communicate between laboratory diagnosticians and field veterinarians.
- Dr. Hua-Ji Qiu from HVRI reported on the enhanced pathogenicity of a new pseudorabies virus emerging in China. Current Bartha-K61 vaccine could not protect against the new virus, and a gene-deleted vaccine was developed in HVRI with promising results.

Session on diagnostic assays for animal diseases chaired by Dr. Julien Cappelle from CIRAD

- Dr. Jiajun Wu from CADC presented an overview of the different PRRS diagnostic technologies available and the best uses for each of them.
- Dr. Widén Frederik from SVA covered the very important issue of field diagnostics, a tool that could be really useful for the early reaction to outbreaks. Through a number of examples of field diagnostics, the presentation covered all the uses, conditions of use, applications and the advantages they offer compared with traditional laboratory diagnostics, and how to integrate their use in a diagnostic/surveillance strategy.
- Dr. Tongling Shan from SHVRI introduced the use of viral metagenomics in the discovery of unknown viruses in humans, wildlife and livestock, but focusing on the identification of diarrhea of unknown cause in pigs in China.
- Dr. Daniel Beltran-Alcrudo from FAO presented on two laboratory tools developed by the FAO laboratory group, which are now publicly available for research institutions and laboratories to use: 1) the laboratory mapping tool (LMT), which aims to aid in laboratory assessment (both current status and evolution over time) and determine strengths and gaps in laboratory functionality, and 2) the genetic module, which aids molecular epidemiology by linking outbreak databases with sequence databases.

Speech by the LinkTADs Advisory Board member chaired by Dr. Hua-Ji Qiu from HVRI

Dr. Chaoyang Fu from Harbin Weike Biotechnology Development Company, China, an industry member of the Advisory Board of LinkTADs, ended the session introducing the main animal health challenges in China and the need to develop rapid and effective diagnosis as well as multivalent, efficient marker vaccines to aid with prevention and control of animal infectious diseases. He called for the involvement and collaborations of European and Chinese scientists and explained how Weike is working to achieve those goals.

Dr. Daniel Beltran-Alcrudo from FAO and LinkTADs coordinator, made the closing remarks. He talked about the mission and the tasks of the LinkTADs project, summarized the key points of each presenter in the workshop, the importance of linking work done in EU and China, and also between laboratory aspects and epidemiology. He thanked those who contributed to the successful workshop and at last, he declared the meeting closed.

Conclusions of the Workshop

The effective control of transboundary animal diseases and zoonoses depends largely on the joint efforts of stakeholders, including policy makers, scientists, diagnostic technicians, veterinarians, farmers, and so on. Laboratory study should be linked closely to the field epidemiology. All-round collaborations and coordinated actions between EU and China are strongly encouraged. The following WP3/WP4 workshops are suggested to focus on the control of emerging/re-emerging animal diseases and the eradication of several economically important animal diseases. Different parties, including policy makers and industry representatives, should be involved in the coming LinkTADs events.

Photos of the Shanghai WP4 2nd Workshop

Figure 1 Group photo of the Shanghai WP4 2nd Workshop

Figure 2 Audience (1)

Figure 3 Audience (2)

Figure 4 Presentation by Dr. José Manuel Sánchez-Vizcaino

Figure 5 Presentation by Dr. Linda Dixon

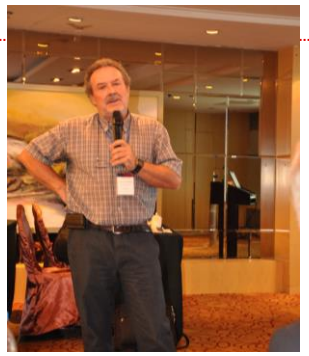

Figure 6 Presentation by Dr. Jose Maria Blasco

Figure 7 Presation by Dr. Alessio Lorusso

Figure 8 Presentation by Dr. Daniel BeltranAlcrudo

Figure 9 Presentation by Dr. Hua-Ji Qiu

Figure 10 Presentation by Dr. Ana Mateus

Figure 11 Presentation by Dr. Tongling Shan

Figure 12 Presentation by Dr. Julien Cappelle

Figure 13 Presentation by Dr. Ling Zhao

Figure 14 Presentation by Dr. Widén Frederik

Figure 15 Presentation by Dr. Ningning Song

Figure 16 Speech by Dr. Chaoyang Fu

Figure 17 Chaired by Dr. Zhyong Ma

Figure 18 Chaired by Dr. Lihong Liu

Figure 19 Chaired by Dr. Fusheng Guo

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02.

Agenda

The FP7 LinkTADs WP4 2nd Workshop on Vaccine and Diagnostic Technology Development on Transboundary Animal Diseases and Zoonoses

Rayfont Hotels & Apartments, Shanghai, China, 17 October 2014

Participants:

- Centre de Cooperation International en Recherche Agronomique pour le Developpement (CIRAD)
- Centro de Investigación y Tecnología Agroalimentaria de Aragón (CITA)
- China Animal Disease Control Center (CADC)
- Food and Agriculture Organization of the United Nations (FAO)
- Harbin Veterinary Research Institute (HVRI), Chinese Academy of Agriculture Sciences (CAAS)
- Huazhong Agricultural University (HZAU)
- Istituto Zooprofilattico Sperimentale dell'Abruzzo e del Molise (IZSAM)
- Royal Veterinary College (RVC)
- Shanghai Veterinary Research Institute (SHVRI), CAAS
- Statens Veterinaermedicinska Anstalt (SVA)
- The Pirbright Institute (TPI)
- Universidad Complutense de Madrid (UCM)
- LinkTADs Advisory Board member
- Invited external participants

Description:

The major goal of WP4 Workshops of the FP7 LinkTADs project is to establish a network for all laboratories involved in this project to exchange and discuss the diagnostic technologies and vaccine development for the LinkTADs priority diseases. Since the 1st WP4 Workshop in Shanghai in April 2014, wide collaborations among partners have been established. The main objective of the 2nd Workshop is to strengthen these collaborations on diagnostic technologies and vaccine development, with special emphasis on the linkage between epidemiology and laboratory research in the prevention and control of important animal diseases and zoonoses for both EU and China.

Agenda

8:30-8:40	**Opening address- Introduction to the WP4 2nd workshop** – *Dr. Hua-Ji Qiu, HVRI (10 min)*
8:40-10:45	**Session I Control of zoonoses *(Chair: Dr. Zhiyong Ma)***
8:40-9:30	**Title: Activities of the IZSAM in the context of vector-borne diseases** – *Dr. Alessio Lorusso, IZSAM (40 min+10 min Q&A)*
9:30-10:20	**Title: The current situation of the brucellosis diagnostic tests and anti-brucellosis vaccines** – *Dr. Jose Maria Blasco, CITA (40 min+10 min Q&A)*
10:20-10:45	**Title: Progress in rabies vaccine development** – *Dr. Ling Zhao, HZAU (20 min+5 min Q&A)*
10:45-11:05	*Group photo and tea break (20 min)*
11:05-12:20	**Session II Linking laboratory research with epidemiology *(Chair: Dr. Fusheng Guo)***
11:05-11:30	**Title: Epidemiological survey of bovine tuberculosis in China** – *Dr. Ningning Song, HVRI (20 min+5 min Q&A)*
11:30-11:55	**Title: Integrating ecological and epidemiological methods for investigations of animal diseases** – *Dr. Julien Cappelle, CIRAD (25 min+5 min Q&A)*
11:55-12:20	**Title: An integrated perspective on animal disease control and prevention** – *Dr. Ana Mateus, RVC (25 min+5 min Q&A)*
12:20-13:20	*Lunch break (60 min)*

13:20-15:25	**Session III Control of swine diseases *(Chair: Dr. Lihong Liu)***
13:20-14:10	**Title: ASF: molecular and cell biology, vaccine development and immune responses** – *Dr. Linda Dixon, TPI (40 min+10 min Q&A)*
14:10-15:00	**Title: Key points for the prevention and control of ASF** – *Dr. José Manuel Sánchez-Vizcaino, UCM (40 min+10 min Q&A)*
15:00-15:25	**Title: Characterization of a pseudorabies virus variant isolated from Bartha-K61-vaccinated swine population in China and development of a gene-deleted vaccine** – *Dr. Hua-Ji Qiu, HVRI (20 min+5 min Q&A)*
15:25-15:45	*Coffee break (20 min)*
15:45-17:00	**Session IV Diagnostic assays for animal diseases *(Chair: Dr. Julien Cappelle)***
15:45-16:10	**Title: Diagnostic technologies of PRRS** – *Dr. Jiajun Wu, CADC (20 min+5 min Q&A)*
16:10-16:35	**Title: Field diagnostic assays for animal diseases** – *Dr. Widén Frederik, SVA (20 min+5 min Q&A)*
16:35-17:00	**Title: Viral metagenomics in swine with diarrhea** – *Dr. Tongling Shan, SHVRI (20 min+5 min Q&A)*
17:00-17:10	**Title: Two FAO laboratory tools – The genetic module & The laboratory mapping tool** – *Dr. Daniel Beltran-Alcrudo, FAO (10 min)*
17:10-17:30	**Session V Speech by the LinkTADs Advisory Board member *(Chair: Dr. Hua-Ji Qiu)***
17:10-17:30	**Title: One World, One Health** – *Dr. Chaoyan Fu – Harbin Weike Biotechnology Development Co., Ltd. (20 min)*
17:30-17:45	***Closing remarks*** –*Dr. Daniel Beltran-Alcrudo, FAO (15 min)*
18:30-20:00	***Dinner***