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Cooperation between EU and China on Animal Infectious Diseases and Zoonoses

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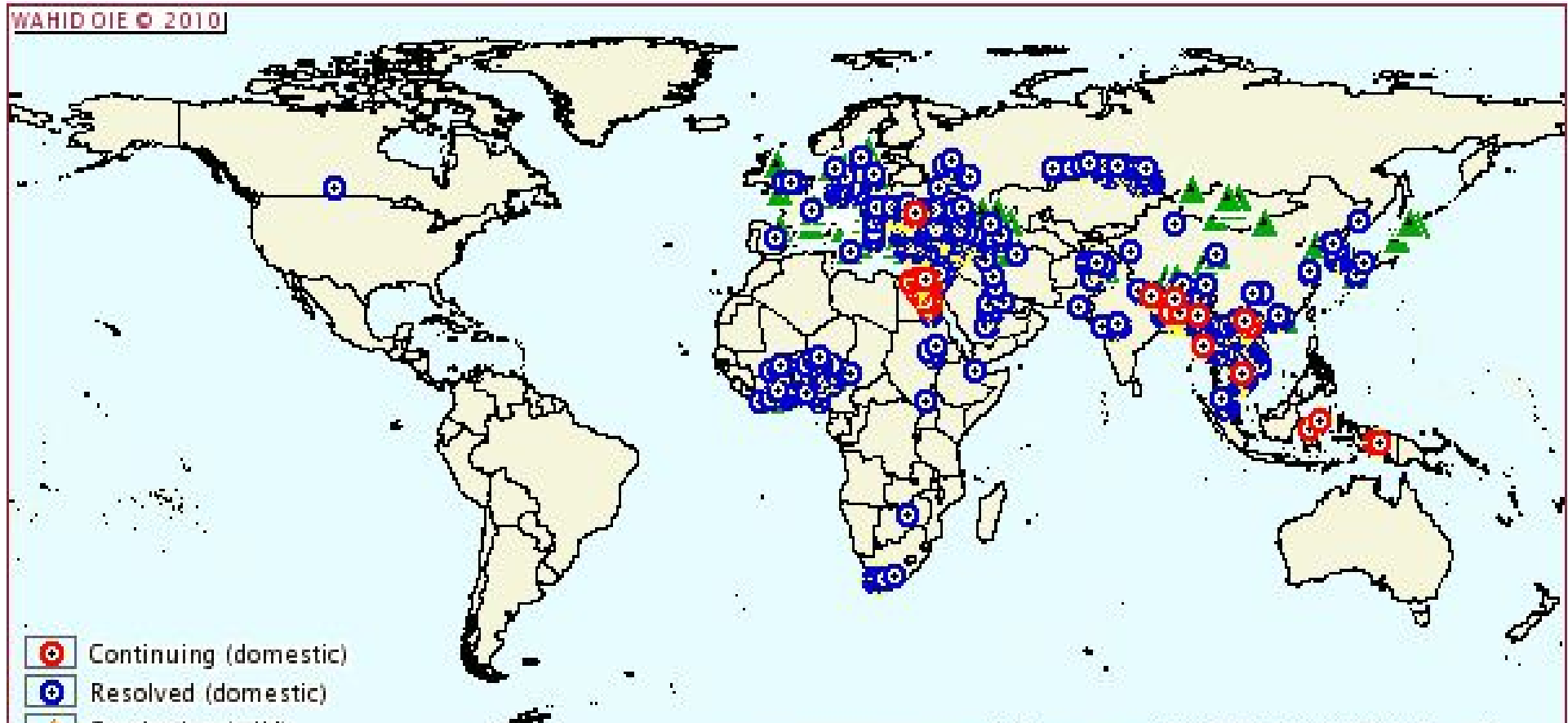
Animal husbandry in China

- 400 million cattle, sheep and goat
- 467 million pigs: ~ 50% of the total in the world
- 5 billion poultry: > 20% of the world population

- China is now the largest livestock producer and consumer in the world.
- A healthy animal husbandry sector is therefore, crucial for the national and international food security.

- However, the animal husbandry in China is constantly impacted by the animal infectious diseases.
- In addition, the zoonotic nature of some of the animal diseases gives rise to severe threats for the public health (avian influenza, brucellosis, etc).

H5N1 avian influenza



Since 2003, H5N1 AIVs have been detected in poultry and wild birds in 63 countries

H5N1 avian influenza

- Resulting in the death or culling of over 250 million poultry and wild birds
- Endemic in several developing countries, e.g. Bangladesh, Egypt, India, Indonesia, Vietnam, and China.
- Resulting in 637 cases of human infection of which 378 cases were lethal.

H7N9 avian influenza



135 human cases of H7N9 AIV infection have been reported in 13 provinces and municipalities in China, of which 44 cases were lethal.

- The effective control of animal infectious diseases is crucial for securing the global food security, animal welfare and public health.
- A close cooperation between the EU and China is therefore equally beneficial for both sides.

The role of CAAS

- Chinese Academy of Agricultural Sciences (CAAS) is the national agricultural research institution in China.
- CAAS has played an important role in the prevention and control of animal infectious diseases and zoonoses in China.

Institutes on Veterinary Research in CAAS

1. HVRI: Harbin Veterinary Research Institute
2. LVRI: Lanzhou Veterinary Research Institute
3. SHVRI: Shanghai Veterinary Research Institute
4. BAHVRI: Beijing Animal Husbandry and Veterinary Research Institute
5. LIAHVPS: Lanzhou Institute of Animal Husbandry and Veterinary Pharmaceutical Sciences
6. JISWEAPS: Jilin Institute of Special Wild Economic Animals and Plant Sciences

Veterinary Research Activities in CAAS

- **Avian** infectious diseases (Avian influenza; IBD; ND; IB; MD; AL; DP; DVH; etc)
- **Swine** infectious diseases (CSF; PRRS; PrV; TGE; PED; PCV2; Swine influenza; Acanthocephaliasis; etc)
- **Large animal** infectious diseases (FMD; PPR; EIA; Bluetongue; Equine influenza; Theileria; etc)
- **Zoonoses** (Rabies; Brucellosis; Tuberculosis; Toxoplasma; Cysticercosis; etc)
- **Small animal and pet animal** infectious diseases (CD; CPD; RHD; etc)

Research areas in animal infectious diseases and zoonoses in CAAS

- Epidemiology
- Immunology
- Diagnosis
- Vaccinology
- Basic research (pathogenesis, transmission, host-pathogen interaction, structural biology...)
- Risk analysis
- Animal-derived food safety

The cooperation between the EU and CAAS on the control of animal infectious diseases

- Established in 1990s
- Greatly deepened and strengthened in recent years

Completed projects in Framework Programme

Projects	FP No.	Period	CAAS partners
Acute infectious bursal disease in poultry: epidemiology of the disease, basis of virulence and improvement of vaccination (INCO)	FP4	1998-2001	HVRI
Livestock hypodermosis improvement of the control measures and diagnostic tools (INCO 2)	FP5	2000-2004	LVRI SHVRI
Molecular and immunological characterization of merozoite antigens and their encoding genes of a theileria species highly pathogenic for small ruminants in China: application for the development of diagnostics and vaccine (ADDAV)	FP5	2000-2005	LVRI
Application for the development of diagnostics and vaccine for small ruminants in China (INCO 2)	FP5	2001-2001	LVRI SHVRI

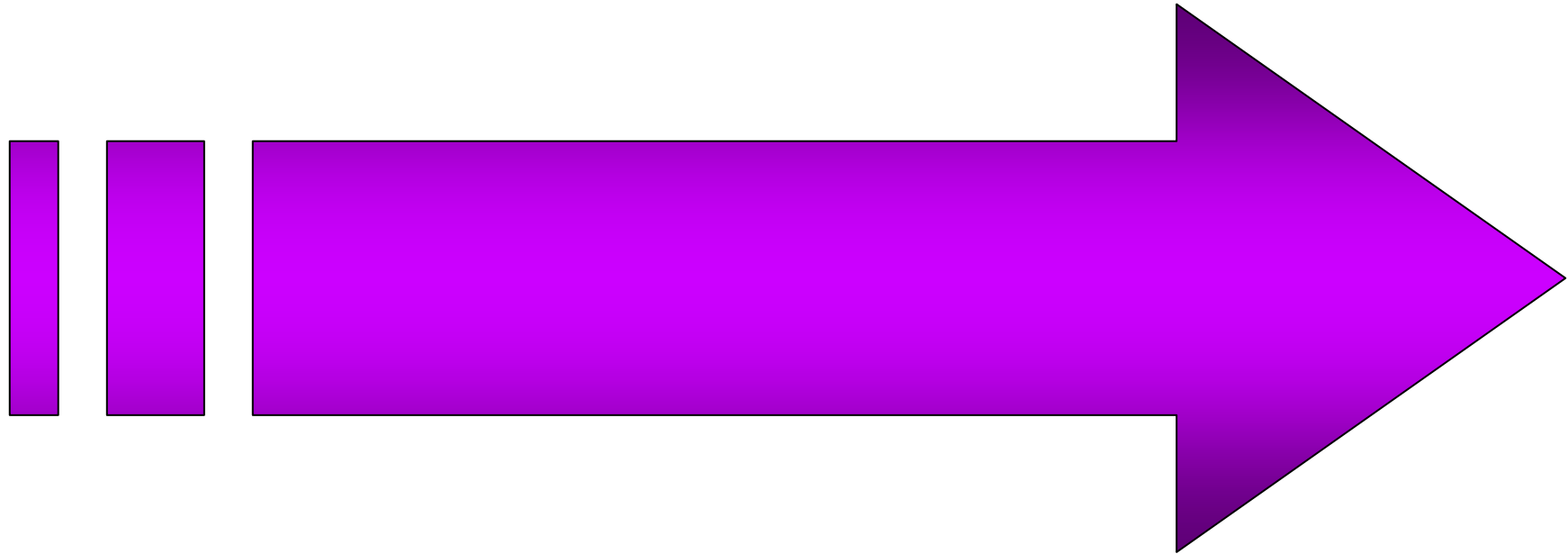
Completed projects in Framework Programme (cont.)

Projects	FP No.	Period	CAAS partners
Integrated consortium on ticks and tick-borne diseases (ICTTD)	FP6	2004-2010	LVRI
Evaluation and improvement of integrated livestock disease control measures through distribution of molecular diagnostic tools, evaluation of disease situation, training and capacity building in Asia (INCOME)	FP6	2005-2008	LVRI
Network on epizootic disease diagnostics and control (EPIZONE)	FP6	2006-2011	LVRI HVRI
The EU, China and South East Asia Dialog for the development of research areas in animal health of mutual interest (ASEMDIALOG)	FP6	2007-2008	LVRI

Currently active projects

Projects	FP No.	Period	CAAS partners
New tools and approaches to control Porcine Reproductive and Respiratory Syndrome (PRRS) in the EU and Asia (PoRRSCon)	FP7	2010-2014	SHVRI
Global Strategic Alliances for the Coordination of Research on the Major Infectious Diseases of Animals and Zoonoses (STAR-IDAZ)	FP7	2011-2015	HVRI
Linking Epidemiology and Laboratory Research on Transboundary Animal Diseases and Zoonoses in China and EU (LinkTADs)	FP7	2013-2018	HVRI, SHVRI, LZVRI

The future perspective of the
cooperation between the EU and China on
animal infectious diseases and zoonoses



Interests of cooperation

- Applying for joint OIE reference laboratory or OIE twinning programs
- Training of young scientists
- Mutual visiting and exchange of visiting scholars
- Information and technology platform sharing
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Cooperation priorities between EU and CAAS

- Development of high-throughput diagnosis assays of animal infectious diseases and zoonoses
- Development of novel vector-based vaccines and adjuvants
- Basic research on animal infectious disease and zoonoses (pathogenesis, host-pathogen interaction...)
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Potential projects

- Epidemiology of major animal infectious diseases and zoonosis (CSF, PRRS, PCV2, TGE, PED, FMD, AIV, IBD, AL, MD, IBV, TB, Brucellosis, Toxoplasma, etc)
- Analysis of innate immunity of major animal viruses (AIV, CSFV, PRRSV, TGEV, PEDV, FMDV, IBDV, MD, AL, IBV, etc)
- Development and evaluation of marker vaccines against animal infectious diseases (Brucellosis, PPR, PCV2, CSF, etc)

Potential projects

- Development and comparative evaluation of diagnostic assays against animal infectious diseases (PCV2, TGE, PED, etc)
- Understanding the mechanism of the emergence of new animal infectious diseases and zoonoses (e.g. H7N9 AIV)
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Thanks for your attention!