Donghu Forum

The 2nd International Symposium on Wildlife Diseases Research Network (WDRN)
(Second circular)

1. Welcome message

Dear colleagues,

On behalf of the organizing committee, I warmly welcome you to attend the 2nd International Symposium of Wildlife Diseases Research Network (2nd WDRN symposium), which is held at Beijing, China. The symposium is organized by the International Society of Zoological Sciences (ISZS) and the International Union of Biological Sciences (IUBS), hosted by the Institute of Zoology (IOZ), Chinese Academy of Sciences (CAS) and School of Ecology and Environment, Hainan University, and supported by China Association of Science and Technology (CAST) and CAS.

ISZS is developing a Wildlife Diseases Research Network in the world, with collaboration of its partner such as Working Group on Zoonotic Disease (WGZD) of IUBS. WDRN is composed of a steering committee, a scientific committee, research expert network and collaborative partners. WDRN will hold annual symposia, workshops, training courses and publish annual reports on wildlife diseases.

This symposium aims to strengthen the capacity of research on wildlife diseases, and international collaborations, and to bridge the gaps in prevention and control of diseases of humans, domestic animals and wild animals. We are grateful to all symposium organizers and speakers for their great contribution to the 2nd WDRN symposium.

On behalf of organizing committee, I warmly welcome all of you to attend the symposium!

Warm regards,

Zhibin Zhang
Chair of the organizing committee for the 2nd WDRN symposium
Executive Director of ISZS
Professor, School of Ecology and Environment, Hainan University
2. Organizers, Hosts and Sponsors

Organizers:
International Society of Zoological Sciences (ISZS)
International Union of Biological Sciences

Hosts:
Institute of Zoology (IOZ), Chinese Academy of Sciences (CAS)
School of Ecology and Environment, Hainan University

Sponsors:
Department of International Affairs, China Association for Science and Technology
Bureau of International Cooperation, CAS
Alliance of International Science Organizations (ANSO)

Integrative Zoology

3. Organizing committee

Chairs:
Zhibin Zhang, School of Ecology and Environment, Hainan University, China
Santiago Merino, Professor, National Museum of Natural Sciences, Spain

Members:
Steven Belmain, Natural Resources Institute, University of Greenwich, UK
Jianshi Jin, Institute of Zoology, Chinese Academy of Sciences, China
Herwig Leirs, University of Antwerpen, Belgium.
Mengmeng Liu, Hainan University, China
Ming Liu, International Society of Zoological Sciences
Xuan Liu, Institute of Zoology, Chinese Academy of Sciences, China
Rhodes H. Makundi, Sokoine University of Agriculture, Tanzania
Santiago Merino, Professor, National Museum of Natural Sciences, Spain
Wenhua Xiong, International Society of Zoological Sciences
Yanchuan Xu, Northeast Forestry University, China

4. Scientific committee

Chairs:
Santiago Merino, Professor, National Museum of Natural Sciences, Spain
Zhibin Zhang, Professor, School of Ecology and Environment, Hainan University, China; Executive Director of ISZS.

Members:
Rodolfo Dirzo, Professor, Department of Biology, Stanford University, USA
Elizebath Hadly, Professor, Department of Biology, Stanford University, USA
Uma Ramakrishnan, Professor, National Center of Biological Sciences, Tata Institute of Fundamental Research, India
Nils Chr. Stenseth, Professor, Faculty of Mathematics and Natural Sciences, University of Oslo, Norway
Gonzalo Vogel, Professor, Centro de Investigación en Sustentabilidad (CIS), Facultad de Ciencias de la Vida, Universidad Andrés Bello, Chile

5. **Time:** December 5-7, 2023

6. **City:** Beijing, China

7. **Hotel:**
   - Beijing Ya'ao International Hotel, No. A-1 Datun Road, North Beach, Chaoyang District, Beijing [北京亚奥国际酒店，北京市朝阳区北沙滩大屯路甲1号]

8. **Meeting Venues**
   - Dec. 5 Morning session: East Lake International Center, 6 Lizexi Street, Chaoyang District, Beijing [北京东湖国际中心，北京市朝阳区利泽西街6号院]
   - Dec. 5 Afternoon, Dec. 6-7: Institute of Zoology (IOZ), Chinese Academy of Science (CAS), 1 Beichen West Road, Chaoyang District, Beijing [中国科学院动物研究所，北京市朝阳区北辰西路1号院5号]

9. **Tentative schedule:**
   - Dec. 4: Registration at the lobby of Ya'ao International Hotel from 10:00 to 19:00
   - Dec. 5: Morning 8:00-9:00, Check in at East Lake International Center
9:00-11:30: Opening & plenary sessions
Afternoon: Plenary sessions at IOZ, CAS (Bus transportation service is available for participants traveling between hotels and meeting venues)

Dec. 6: Morning: Oral presentations, at IOZ, CAS
Afternoon: Oral presentations, at IOZ, CAS

Dec. 7: Morning: Round table discussions, at IOZ, CAS
Afternoon: Visiting the National Zoological Museum, IOZ, CAS.

Dec. 8: Departure

10. Tentative Program:

Dec. 5 (Tuesday) 9:00-12:00
Venue: East Lake International Center

<table>
<thead>
<tr>
<th>Time</th>
<th>Speaker</th>
<th>Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>10:00-10:30</td>
<td></td>
<td>Group Photo &amp; Tea Break</td>
</tr>
<tr>
<td>10:30-11:00</td>
<td>Steven Belmain, Natural Resources Institute, University of Greenwich, UK</td>
<td>One Health approach to tick-borne disease control through manipulation of reservoir host communities at landscape scale</td>
</tr>
<tr>
<td>11:00-11:30</td>
<td>Jiaming Zhang, Chinese Academy of Tropical Agriculture, China</td>
<td>Genome analysis of SARS-CoV-2 haplotypes: Separation and parallel evolution of the major haplotypes occurred considerably earlier than their emergence in China</td>
</tr>
</tbody>
</table>

11:30-12:30: Transportation to IOZ, CAS

12:30-14:00: Lunch (Venue: North cafeteria)

Dec. 5 (Tuesday) 14:00-17:30
Venue: B105, IOZ, CAS
Chaired by Steven Belmain and Xuan Liu

<table>
<thead>
<tr>
<th>Time</th>
<th>Speaker</th>
<th>Title</th>
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<tbody>
<tr>
<td>14:00-14:25</td>
<td>Herwig Leirs, University of Antwerp, Belgium</td>
<td>Studying African small mammals to better understand emerging infectious diseases</td>
</tr>
<tr>
<td>14:25-14:50</td>
<td>Jiahai Lu, Sun Yat-sen University, China</td>
<td>One Health-Ending the Pandemic</td>
</tr>
<tr>
<td>14:50-15:15</td>
<td>Rhodes H. Makundi, Sokoine University of Agriculture, Tanzania</td>
<td>Aspects of the ecology and epidemiology of plague in Tanzania</td>
</tr>
<tr>
<td>Time</td>
<td>Speaker</td>
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<tr>
<td>15:15-15:40</td>
<td>Zhen Zou, IOZ, CAS, China</td>
<td>Recent advances in mosquito antifungal immune responses</td>
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<tr>
<td>15:40-16:00</td>
<td></td>
<td><strong>Tea Break</strong></td>
</tr>
<tr>
<td>16:00-16:25</td>
<td><strong>Nubia Estela Matta Camacho</strong> Universidad Nacional de Colombia-Sede Bogotá, Colombia</td>
<td>The biggie: decoding the blood parasites that infect wild animals in Colombia</td>
</tr>
<tr>
<td>16:25-16:50</td>
<td><strong>Santiago Merino</strong> National Museum of Natural Sciences, Spain</td>
<td>SynBio-Driven Biodesign for Innovative Bio-Industrialization</td>
</tr>
<tr>
<td>16:50-17:15</td>
<td><strong>Aihua Zheng</strong> IOZ, CAS, China</td>
<td>Suppression of flavivirus transmission from animal hosts to mosquitoes with a mosquito-delivered vaccine</td>
</tr>
<tr>
<td>17:15-17:40</td>
<td><strong>Xuan Liu</strong> IOZ, CAS, China</td>
<td>Biological invasions facilitate zoonotic diseases emergences</td>
</tr>
<tr>
<td>17:40-19:30</td>
<td></td>
<td><strong>Reception dinner (Venue: Ya’ao restaurant)</strong></td>
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</table>

**SESSION PROGRAMS**

Dec. 6 (Wednesday) 08:30-11:50  
Venue: B105, IOZ, CAS  
Chaired by Herwig Leirs and Mengmeng Liu

<table>
<thead>
<tr>
<th>Time</th>
<th>Speaker</th>
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</thead>
<tbody>
<tr>
<td>08:30-08:55</td>
<td><strong>Mwajabu Selemani</strong> Sokoine University of Agriculture, Tanzania</td>
<td>Pathogenic Leptospira in Rodents: An Emerging Threat in Tanzanian Wetlands: A Case Study of Kilombero Valley Wetland</td>
</tr>
<tr>
<td>08:55-09:20</td>
<td><strong>Hongxuan He</strong> IOZ, CAS, China</td>
<td>Pathogen Spillover: from wildlife reservoirs to global epidemics</td>
</tr>
<tr>
<td>09:20-09:45</td>
<td><strong>Keun Hwa Lee</strong> Hanyang University College of Medicine Seoul, South Korea</td>
<td>Severe fever with thrombocytopenia syndrome virus infection: from epidemiology to immunopathogenesis</td>
</tr>
<tr>
<td>09:45-10:10</td>
<td><strong>Guan-Hong Wang</strong> IOZ, CAS, China</td>
<td>Symbiotic and genetic strategies to combat vector-borne disease</td>
</tr>
<tr>
<td>10:10-10:30</td>
<td></td>
<td><strong>Tea Break</strong></td>
</tr>
<tr>
<td>10:30-10:55</td>
<td><strong>Naomi Cogger</strong> School of Veterinary Science, Massey University, New Zealand</td>
<td>The interconnected Web of Life in Aotearoa, New Zealand</td>
</tr>
</tbody>
</table>
### Dec. 6 (Wednesday) 14:00-17:20

**Venue:** B105, IOZ, CAS  
**Chaired by Rhodes H. Makundi and Jianshi Jin**

<table>
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<tr>
<th>Time</th>
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<tr>
<td>14:00-14:25</td>
<td>Soanandrasana Rahelinirina</td>
<td>Monitoring and surveillance of wildlife plague in old inactive and current active foci in Madagascar</td>
</tr>
<tr>
<td>14:25-14:50</td>
<td>Gerardo Suzán</td>
<td>Multiscale approaches to understand emerging and reemerging infections among wildlife, domestic animals and humans</td>
</tr>
<tr>
<td>14:50-15:15</td>
<td>Jianshi Jin</td>
<td>High-throughput single-cell profiling methods for microbiota and mammalian cells</td>
</tr>
<tr>
<td>15:15-15:40</td>
<td>Yanchun Xu</td>
<td>Extraction of DNA from difficult materials to support ecological studies of wildlife</td>
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<tr>
<td>15:40-16:00</td>
<td><strong>Tea Break (Venue: North cafeteria)</strong></td>
<td></td>
</tr>
<tr>
<td>16:00-16:25</td>
<td>Gerald Francis Misinzo</td>
<td>Deployment of fit-for-purpose next-generation sequencing technologies in the diagnosis of infectious diseases of humans and animals</td>
</tr>
<tr>
<td>16:25-16:50</td>
<td>Hao Qin</td>
<td>Prevalence of Lyme disease in China</td>
</tr>
</tbody>
</table>
16:50-17:15  Zhijun Hou  
Northeast Forestry University, China  
The genetic characteristics of Sarcoptes scabiei from Chinese serow and goral compared with other mites from different hosts and geographic locations using ITS2 and cox1 sequences

17:15-17:40  Meng Li  
IOZ, CAS, China  
Comparative susceptibility of SARS-CoV-2, SARS-CoV, and MERS-CoV across mammals

17:40-18:05  Mengmeng Liu  
Hainan University, China  
Vector-borne diseases in companion animals and peri-domestic wildlife from A One Health perspective

18:05-19:30  Dinner

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<table>
<thead>
<tr>
<th>Time</th>
<th>Chair</th>
<th>Title</th>
</tr>
</thead>
</table>
| Dec. 7 (Thursday) 08:30-12:00 | Steven Belmian  
University of Greenwich, UK  | Round table discussion: Rodent and disease control in Africa |
|          | Herwig Leirs  
University of Antwerp, Belgium  |                                                  |
| 08:30-10:00 | Rhodes H. Makundi  
Sokoine University of Agriculture, Tanzania  |                                                  |

10:00-12:00  Yanchun Xu  
Northeast Forestry University, China  
Mengmeng Liu  
Hainan University, China  
Round table discussion: Disease control in zoos

Dec. 7 (Thursday) 13:30-15:30  
Visiting the National Zoological Museum, IOZ, CAS

11. Insurance  
All insurance during the meetings and while traveling in China must be self-arranged.

12. Currency, Credit Cards and ATM: The Chinese currency is the Chinese yuan, known as CNY or RMB. One CNY consists of 10 jiao (dimes) or 100 fen (cents; these are seldom seen). Denominations available in bank notes are 1, 5, 10, 50 and 100 CNY. You are suggested to exchange currencies at airports when you arrive and in banks later. The exchange rate is provided daily by the Bank of China. Currently, 1 USD is equivalent to approximately 7.14 CNY. All currency exchange receipts should be saved in order to change RMB back to your own currency because banks may request to see the original exchange receipt. You must have your passport when exchanging money.
Visa, MasterCard, American Express, Diners Club, and JCB are accepted in larger department stores and hotels. ATMs are available for you to obtain RMB with your credit or debit card. The amount deducted from your account will vary due to fluctuations in the exchange rate.

13. Transportation: Beijing has a high-speed transport system. It has a transport hub consisting of two airports, several train stations, many buses and subway lines, taxis and even rickshaws. These all offer good services to the public and extend in all directions, providing people with convenient ways to get around Beijing. The charge of taxi from Beijing Capital International airport to Ya'ao International Hotel is 90-150 CNY. It’s 170-300 CNY from Beijing Daxing International airport to Ya'ao International Hotel.

14. Information on Beijing

Beijing (北京, the first character "bei" means north and "jing" means capital), a world famous city and young metropolis, is the capital city of the People's Republic of China. It is also the center of politics, science, education, culture and art, and one of the economic centers, in the country. As one of the largest ancient cities in the world, Beijing is home to a large number of natural and manmade wonders, and unique cultural heritage.

Geography: Beijing Municipality lies in the northwest of the North China (Huabei) Plain, around 150 kilometers northwest from Tianjin's port and the Bohai Sea. Measuring over 16,800 km2, the city has a total population of approximately 17.5 million and it is China’s second largest city after Shanghai. To the north of the city are the Jundu mountains, to the west the Western hills and to the south and east is the alluvial plain, formed by the Yongding and Chaobai rivers. 39% of the municipality is flat; the city, surrounding plain and the other 61%, to the west and north, where the Great Wall winds along the ridges, is mountainous. The center of Beijing is 44 m asl.

Beijing is a combination of tradition and modern prosperity. The imperial gardens, ancient temples and tombs of the royal family provide a cultural backdrop to modern Beijing.

Climate and Temperature: As Beijing is located in a warm temperate zone, it has a semi-humid monsoon continental climate. Beijing has 4 distinct seasons, dry in spring, hot and rainy in summer, cool in autumn and chilly and dry in winter. The wind has significant seasonal variation, with a prevailing northwest wind in winter and a prevailing southeast wind in summer. Beijing has a relatively short spring and autumn. The annually average temperature of Beijing is about 11.7 °C. The coldest weather falls in Jan with the temperature ranging from –22.8 to 10.7 °C and the hottest weather falls in Jul with the temperature ranging from 16.1 to 39.6 °C. The annual average precipitation is about 644 mm and most of the rainfall falls in summer.
Internet Access: Internet service should be available in your hotel room, the airport and some areas around the city.

Water: It is not recommended to drink tap water in China. If you want to drink cold water, it is best to purchase bottled water. It also is recommended that you avoid ice cubes. Hotels usually provide an electric kettle to boil water in your room. Consider using a reusable water bottle.

Voltage, Socket and Plugs: The electrical current in China is 220-volts, 50Hz A/C. Hotels usually provide wall sockets in every room, accommodating both the standard “Flat blade attachment plug (Type A)” and common “Oblique flat blades with ground (inverted V) plug (Type I)”, as well as the not-so-common “Round pin attachment plug (Type C)” as shown in following photographs.

<table>
<thead>
<tr>
<th>Wall socket</th>
<th>Type A plug</th>
<th>Type I plug</th>
<th>Type C plug</th>
</tr>
</thead>
</table>

Hotline Phone Numbers:
110 Police
114 Local Telephone Number Inquiry
116 Domestic Long Distance Inquiry
117 Time Inquiry
119 Fire
120 Ambulance
121 Weather Forecast
122 Traffic Police

15. Introduction of WDRN

In the 21st century, the human society is facing serious threat and challenges of infectious diseases under accelerated climate change and intensified human activities. A majority of emerging or re-emerging infectious diseases in humans is originated from wild or domestic animals, and in return imposes a big threat to biodiversity conservation and livestock production. In order to have a better prevention and control of zoonotic diseases, it is crucial to understand the complex interaction patterns of disease transmission between humans, animals, vectors and pathogens under the rapid change of climate, other drivers of global change, and society by following a “One Health” approach. At the same time, world collaboration is essential to manage zoonotic diseases because animals, vectors and pathogens move freely in the world without
Wildlife diseases are significant components of zoonosis, and they are playing increasingly important roles in causing pandemics of infectious diseases in recent decades. As compared to diseases in humans or domestic animals, wildlife diseases are poorly studied due to the vast diversity of their pathogens, hosts, vectors and habitats as well as global shortage of investment for research. Thus, there is an urgent need to strengthen the capacity of research on wildlife diseases, and international collaborations, in order to promote the prevention and control of zoonotic disease for a healthy world for both people and wildlife.

The International Society of Zoological Sciences (ISZS, http://www.globalzoology.org.cn/) is a non-government organization aiming to promote international cooperation in field of zoology by integrating multiple disciplines covering animals, plants, microorganisms, climate change, and human activities. To promote international collaborations on studies of wildlife diseases, and to bridge the gaps in prevention and control of diseases of humans, domestic animals and wild animals, ISZS is developing a Wildlife Diseases Research Network (WDRN) in the world, with collaboration of its partner such as Working Group on Zoonotic Disease (WGZD) of International Union of Biological Sciences (IUBS) (https://iubs.org/). WDRN is composed of a steering committee, a scientific committee, research expert network and collaborative partners. WDRN will hold annual symposia, workshops, training courses and publish an annual report on wildlife diseases. With support from the WDRN’s expert teams and its partners, WDRN aims to build a database and information center to facilitate the research, monitoring, prevention and control of wildlife diseases around the world. WDRN is devoted to work with IUBS, WHO, WOAH (OIE), FAO, and other organizations to promote prevention and control of zoonotic diseases in the world.

The topics of WDRN symposium include:
(1) Genomics and coevolution of hosts, vectors and pathogens
(2) Disease transmission across species
(3) Impact of climate change on disease prevalence
(4) Influence of biological invasion on disease transmission
(5) Influence of migration of animals or their products on the disease transmission
(6) Impact of biodiversity loss on disease transmission
(7) Identification of hosts, vectors and pathogens
(8) Network construction and analysis of disease transmission
(9) Monitoring and surveillance of hosts, vectors and pathogens and their habitats
(10) Prevention and control of disease transmission
(11) Diagnostic reagents, vaccines, drugs and related equipment
(12) Others