OIE’s roles and initiatives for rabies elimination
- Introduction to the OIE
- Transparency
- Standards
- Expertise
- Solidarity
- OIE Laboratory Twinning
Introduction to the OIE
World Organisation for Animal Health (OIE)

A scientific and technical intergovernmental organisation

1924

Creation of the Office International des Épizooties (OIE)

1945

Creation of the United Nations

1994

New preferred name: World Organisation for Animal Health (OIE)

2003

Recognised by WTO

182 Member Countries

Headquarters (Paris, France)

5 Regional Representations

7 Sub-Regional Representations & Offices
General Organisation of the OIE

World Assembly of Delegates
(highest authority, 182 member countries)

OIE Council (9 members)

Director General

Regional Representations (5)

Specialist Commissions (4)

Regional Commissions (5)

Dr Monique ELOIT
OIE Specialist Commissions

Terrestrial Animal Health Standards Commission
“Code Commission”

President
Dr Etienne Bonbon (France)

1st Vice President
Dr Gaston Maria Funes (Belgium)

2nd Vice President
Dr Masatsugu Okita (Japan)

Members
Dr Lucio Ignacio Carbajo Goni (Spain)
Dr Salah Hammami (Tunisia)
Dr Bernardo Todeschini (Brazil)

Scientific Commission for Animal Diseases
“Scientific Commission”

President
Dr Cristobal Zepeda (USA)

1st Vice President
Dr Kris de Clercq (Belgium)

2nd Vice President
Dr Baptiste Dungu (UK)

Members
Dr Silvia Bellini (Italy)
Dr Mischeck Mulumba (South Africa)
Dr Zengren Zheng (China)

Aquatic Animal Health Standards Commission
“Aquatic Animals Commission”

President
Dr Ingo Ernst (Australia)

1st Vice President
Dr Alica Gallardo Lagno (Chile)

2nd Vice President
Dr Edmund Peeler (UK)

Members
Dr Kevin William Christison (South Africa)
Dr Prof. Hong Liu (China)
Dr Atle Lillehaug (Norway)

Biological Standards Commission
“Laboratories Commission”

President
Prof. Emmanuel Couacy-Hymann (Lanada)

1st Vice President
Dr Franck Berthe (USA)

2nd Vice President
Dr John Pasick (Canada)

Members
Prof. Ann Cullinane (Ireland)
Dr Joseph S. O’Keefe (New Zealand)
Dra. Ana Maria Nicola (Argentina)
The four pillars of the OIE

Improving animal health and welfare worldwide

**TRANSPARENCY**
- of the world animal disease situation
- including zoonoses

**STANDARDS**
- for international trade of animals and animal products
- under the mandate given by the WTO

**EXPERTISE**
- Collection and dissemination of veterinary scientific information
- animal disease prevention and control methods

**SOLIDARITY**
- between countries to strengthen capacities worldwide
- Capacity building tools and programmes
Transparency
- World Animal Health Information System –
WAHIS/WAHID

180 countries on line

Early warning system

Monitoring system

Information from the Annual reports

Immediate notification

Follow-up & Final report

Annual report

Six monthly report

- Alert messages for specific epidemiological events & for emerging diseases
- Follow-up of outbreaks notified
- Information for 118 OIE-listed diseases twice a year
- Veterinary Services’ capabilities
- Vaccine production
- National laboratories’ capabilities
- Animal population figures
- Human cases for zoonoses

And non official information tracking system
WAHIS

Prevention
Communication
Notification
Confirmation
Early detection

Veterinarians
Public
Countries

Oficial Veterinary Services

Laboratories confirmation

Farmer
Veterinarian
Hunter
Ranger
Veterinarian
Angler
WAHIS data on rabies

Disease distribution map, Jan-June 2017

Disease outbreak map, Jan 2014-2018
Standards

- OIE Code and Manual -
THE “3 SISTERS”

Standard-setting organisations

Food Safety
CODEX

Animal Health and Zoonoses
OIE

plant health
IPPC

Codex = Joint FAO/WHO Codex Alimentarius Commission
OIE = World Organisation for Animal Health
IPPC = International Plant Protection Convention (FAO)

WTO SPS Agreement recognises OIE as a reference organisation for international standards on animal health including zoonoses
OIE INTERGOVERNMENTAL STANDARDS

OIE key publications

**CODES**

Health standards for trade in animals and animal products

**MANUALS**

Biological standards for diagnostic tests and vaccines

*Standards to improve animal health and welfare and veterinary public health*
Chapter 8.14 Infection with Rabies virus
Chapter 5.11 Certificate
Chapter 2.1.17 Rabies (Manual)

Chapter 7.7 Stray dogs population control
Chapter 1.1 Notification
Chapter 1.4 Surveillance
OIE Code and Manual relevant to Rabies

- **Code**
  - Conditions import (8.14.4-9)
  - Surveillance for disease (1.1 and 1.4)
  - Stray dog population control (7.7)
  - Standards for rabies vaccines production (2.1.17)
- **Manual**
  - Guidelines for Rabies control (8.14.2)
  - Criteria for Rabies freedom (8.14.3)
  - Standards for rabies diagnostic tests (2.1.17)
  - Model export certificates (5.11)
  - Governance, legislation and Communication (3.1 to 3.4)
For the purposes of the Terrestrial Code:

- Is a notifiable disease

- Rabies is a disease caused by one member of the *Lyssavirus* genus: the Rabies virus & all mammals are susceptible to infection;

- A case is any animal infected with the Rabies virus species;


- What was proposed?
  - Dog-mediated rabies case definition
  - Criteria for country or zone free from dog-mediated rabies
  - Revised recommendation for importation of animals: e.g., Importation from infected countries requiring serology 1 month before shipment (instead of 3 months)
  - Endorsement of the National control programme
  - Surveillance articles


Terrestrial Manual Chapter 2.1.17 on Rabies

- Adopted in May 2018
- Updated references
- Updates on existing diagnostic tests
- Include direct rapid immunohistochemistry test (dRIT)
- Include PCR (Conventional and real-time)
- Updated vaccine section
  - Injectable
  - Oral use (Wildlife, dog, baits)

http://www.oie.int/fileadmin/Home/eng/Health_standards/tahm/2.01.17_RABIES.pdf
### Test methods available for the diagnosis and purpose

<table>
<thead>
<tr>
<th>Method</th>
<th>Population freedom from infection</th>
<th>Individual animal freedom from infection prior to movement</th>
<th>Contribute to eradication policies</th>
<th>Confirmation of clinical cases</th>
<th>Prevalence of infection – surveillance</th>
<th>Immune status in individual animals or populations post-vaccination</th>
</tr>
</thead>
<tbody>
<tr>
<td>DFA (antigen detection)</td>
<td>+++</td>
<td>n/a</td>
<td>+++</td>
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<td>n/a</td>
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<tr>
<td>dRIT (antigen detection)</td>
<td>+++</td>
<td>n/a</td>
<td>+++</td>
<td>+++</td>
<td>+++</td>
<td>n/a</td>
</tr>
<tr>
<td>ELISA (antigen detection)</td>
<td>+</td>
<td>n/a</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>n/a</td>
</tr>
<tr>
<td>Cell culture (virus isolation)</td>
<td>+</td>
<td>n/a</td>
<td>+++</td>
<td>+++</td>
<td>+++</td>
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<tr>
<td>MIT (virus isolation)</td>
<td>n/a</td>
<td>n/a</td>
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<td>+</td>
<td>+</td>
<td>n/a</td>
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<tr>
<td>Conventional RT-PCR (RNA detection)</td>
<td>+++</td>
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<td>+++</td>
<td>+++</td>
<td>+++</td>
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<tr>
<td>Real-time RT-PCR (RNA detection)</td>
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<td>+++</td>
<td>+++</td>
<td>+++</td>
<td>n/a</td>
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</table>

### Agent identification

<table>
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<tr>
<th>Method</th>
<th>Population freedom from infection</th>
<th>Individual animal freedom from infection prior to movement</th>
<th>Contribute to eradication policies</th>
<th>Confirmation of clinical cases</th>
<th>Prevalence of infection – surveillance</th>
<th>Immune status in individual animals or populations post-vaccination</th>
</tr>
</thead>
<tbody>
<tr>
<td>DFA (antigen detection)</td>
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<td>+++</td>
<td>+++</td>
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<tr>
<td>dRIT (antigen detection)</td>
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<td>+++</td>
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<td>+++</td>
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<tr>
<td>ELISA (antigen detection)</td>
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<td>n/a</td>
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<td>+</td>
<td>n/a</td>
</tr>
<tr>
<td>Cell culture (virus isolation)</td>
<td>+</td>
<td>n/a</td>
<td>+++</td>
<td>+++</td>
<td>+++</td>
<td>n/a</td>
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<tr>
<td>MIT (virus isolation)</td>
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<td>n/a</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>n/a</td>
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<tr>
<td>Conventional RT-PCR (RNA detection)</td>
<td>+++</td>
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<td>n/a</td>
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<tr>
<td>Real-time RT-PCR (RNA detection)</td>
<td>+++</td>
<td>n/a</td>
<td>+++</td>
<td>+++</td>
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<td>n/a</td>
</tr>
</tbody>
</table>

### Detection of immune response

<table>
<thead>
<tr>
<th>Method</th>
<th>Population freedom from infection</th>
<th>Individual animal freedom from infection prior to movement</th>
<th>Contribute to eradication policies</th>
<th>Confirmation of clinical cases</th>
<th>Prevalence of infection – surveillance</th>
<th>Immune status in individual animals or populations post-vaccination</th>
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<tr>
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<td>+++</td>
<td>+++</td>
<td>n/a</td>
<td>n/a</td>
<td>+++</td>
</tr>
<tr>
<td>ELISA</td>
<td>n/a</td>
<td>n/a</td>
<td>+++</td>
<td>n/a</td>
<td>n/a</td>
<td>+++</td>
</tr>
</tbody>
</table>

**Key:**

+++ = recommended method, validated for the purpose shown

++ = suitable method but may need further validation

+ = may be used in some situations, but cost, reliability, or other factors severely limits its application

- = not appropriate for this purpose;

n/a = purpose not applicable.
**OIE Reference Centres**

**Collaborating Centre**
World centre of research, expertise, standardization of techniques and dissemination of knowledge on a specialty

**Reference Laboratory**
World reference centre of expertise on designated pathogens or diseases

---

### World Distribution of OIE Collaborating Centres

<table>
<thead>
<tr>
<th>OIE Collaborating Centres</th>
<th>1 Collaborating Centre</th>
<th>2 or 3 Collaborating Centres</th>
<th>4 or 5 Collaborating Centres</th>
<th>More than 5 Collaborating Centres</th>
<th>no OIE Collaborating Centre</th>
</tr>
</thead>
</table>

### World Distribution of OIE Reference Laboratories

<table>
<thead>
<tr>
<th>OIE Reference Laboratories</th>
<th>1 to 3 OIE Reference Labs</th>
<th>4 to 10 OIE Reference Labs</th>
<th>11 to 20 OIE Reference Labs</th>
<th>more than 20 OIE Reference Labs</th>
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</thead>
</table>

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<table>
<thead>
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<th>World</th>
<th>Asia</th>
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<tr>
<td>Country</td>
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<td>5</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>World</th>
<th>Asia</th>
</tr>
</thead>
<tbody>
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<td>48</td>
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<tr>
<td>Disease</td>
<td>119</td>
<td>38</td>
</tr>
<tr>
<td>Country</td>
<td>39</td>
<td>8</td>
</tr>
</tbody>
</table>
OIE Reference Laboratories for Rabies

- Dr Christine Fehlner-Gardiner
  Centre of Expertise for Rabies CFIA/ACIA
  Ottawa Laboratory Fallowfield
  Animal Diseases Research Institute
  CANADA

- Prof. Changchun Tu
  Diagnostic Laboratory for Rabies and Wildlife
  Associated Zoonoses, Department of Virology
  Changchun Veterinary Research Institute (CVRI)
  Chinese Academy of Agricultural Sciences (CAAS)
  CHINA (PEOPLE’S REP. OF)

- Dre Florence Cliquet
  Agence Nationale de Sécurité Sanitaire de l’Alimentation, de l’Environnement et du Travail (Anses)
  Laboratoire de la faune sauvage de Nancy
  FRANCE

- Dr Thomas Müller
  Institute of Molecular Virology and Cell Biology,
  Friedrich-Loeffler Institut,
  Federal Research Institute for Animal Health
  GERMANY

- Dr Boris Yakobson
  Kimron Veterinary Institute
  Veterinary Services and Animal Health
  ISRAEL

- Dr Dong-Kun Yang
  Animal and Plant Quarantine Agency
  KOREA (REP. OF)

- Dr José Alvaro Aguilar Setién
  Centro Nacional de Servicios de Diagnóstico en Salud Animal
  MÉXICO

- Dr Claude Taurai Sabeta
  Ondersteypoort Veterinary Institute Rabies Unit
  SOUTH AFRICA

- Dr Anthony Fooks
  APHA Weybridge
  UNITED KINGDOM

- Dr Ryan Wallace
  Poxvirus and Rabies Branch
  Division of High-Consequence Pathogens and Pathology
  National Center for Emerging and Zoonotic Infectious Diseases
  UNITED STATES OF AMERICA

➢ Please contact the OIE Reference Laboratories for any further information on diagnostic tests, reagents and vaccines for rabies
Solidarity
- Global & Regional Initiatives for Capacity building -
Rabies is a neglected, vaccine-preventable disease

An indicator for impact on inequity

- 100% fatal
- ~60,000 deaths per year globally
- Dog bites cause ~ 95-99% of human cases
- Weak data and under-reported
- Mostly children
- Vaccine is a key component of the global plan and national programmes

Our Goal: Zero by 30
United Against Rabies

- Unified response to rabies elimination
- Leveraging strengths of each organization
- Country centric approach
- Provides structure and support for rabies elimination

Global Strategic Plan for "Zero by 30"
Global Strategic Plan

- The Global Strategic Plan to end human deaths from dog-mediated rabies by 2030.
- Investing in rabies elimination saves lives and strengthens both human and veterinary health systems.
- The global strategic plan puts countries at the centre with renewed international support to act.
The Global Strategic Plan

ZERO HUMAN DEATHS FROM DOG-MEDIATED RABIES BY 2030

- less expenditures on rabies
- fewer rabies exposures
- validated rabies elimination in individual countries/regions

Reduce human rabies risk
- improved awareness and education
- increased access to healthcare, medicines and vaccines
- dog vaccinations

Provide guidance and data
2.1 - effective policies, guidance and governance
2.2 - ensuring reliable data to enable effective decision-making

Harness multi-stakeholder engagement
- demonstrate the impact of activities completed under the United Against Rabies collaboration

OBJECTIVE 1
- to effectively use vaccines, medicines, tools and technologies

OBJECTIVE 2
- to generate, innovate and measure impact

OBJECTIVE 3
- to sustain commitment and resources

OBJECTIVES
- operational capacity-building preparedness
- educational & advocacy programmes awareness & commitment
- monitoring & evaluation effectiveness & sustainability

Phase 1: START UP
2018 - 2020
28 COUNTRIES

Phase 2: SCALE UP
2021 - 2025
+52 COUNTRIES

Phase 3: MOP UP
2026 - 2030
+19 COUNTRIES

ZERO HUMAN DEATHS by 2030
What needs to be done at policy level for rabies elimination

- Political will and inclusion in national plans with adequate resources
- Appropriate/customized outreach and education at community, national and subnational levels
- Motivating & coordinating different sectors/players to engage in comprehensive programme
- Enhanced disease reporting and surveillance
- Reaching 70% dog vaccination in at risk populations (roaming dogs included, supplementing with new technologies like oral rabies vaccine)
- Access to safe, efficacious vaccines, at affordable prices
- Promoting intradermal PEP administration in high incidence areas
Rabies control needs One Health approach

• Rabies control must follow the One Health approach
  
  - Rabies control often falls between the cracks as not sufficiently addressed by veterinary and public health services
  - It is a human health problem which can best be prevented by vaccination of dogs and responsible dog ownership

• It is unacceptable to allow people to die of a preventable disease because “it falls between the cracks”

The One Health concept addresses health risks at the animal, human and environmental interface in order to enhance human and animal wellbeing and welfare, and sustainable management of the environment.
OIE’s Support to Member Countries

Performance of Veterinary Services (PVS) Pathways
• Sustainable improvement of a country’s veterinary services (VS) in compliance with OIE standards.
• Assess Gaps and Recommendations to strengthen VS
• Legislation, Education, Laboratories, Public-private partnerships

Capacity building activities
• Strengthen animal disease surveillance, detection and rapid response, Important for improving animal health and public health and improving
• Regular training seminars for OIE Delegates and focal points

OIE Laboratory Twinning
• Improvement of laboratory capacity and expertise
• Activities of the Veterinary Services are an international public good and are consequently eligible for appropriate national, regional or international funding support.

Vaccine Banks
• Regional Vaccine Banks (Avian Influenza, Rabies, FMD)
OIE Rabies Vaccine Bank

- High quality vaccine with a lower cost
- Multiple donor involvement & regional approach

- **OIE orders or deliveries** with financial support from donors:
  - 5,432,200 doses

- **Direct purchase by Countries:**
  - Burkina Faso, Malaysia, Singapore, Mali and Chad, Ghana, Myanmar, Bangladesh, Tanzania
  - 576,700 doses

- **WHO orders or deliveries:**
  - South Africa, Philippines, Tanzania, Central African republic, Pakistan
  - 14,150,000 doses

Total of 20,158,900 doses of rabies vaccines delivered to 30 Countries as of Aug 2018
OIE Laboratory Twinning
Results (Project status - August 2018)

- 47 projects completed
- 31 projects underway
- 8 projects approved and waiting (‘in the pipeline’)
- Both Terrestrial and Aquatic animal diseases are covered by these projects
Laboratory twinning process

- Project initiation through Initial assessment of the laboratory in terms of equipment including the maintenance, quality assurance system, reagents availability, and training needs (Diagnostic and Vaccine units).
- Organization of technical training workshops including staff exchanges on diagnosis and quality assurance systems
- Training on serological, virological, bacteriological, molecular biological techniques and various other necessary scientific tools
- Training on biosafety, and quality management system
- International inter-laboratory proficiency testing and assessment of knowledge
- Guide scientifically and in compliance with the OIE international standards for national disease surveillance and control plans adapted to the country-specific epidemiological context
- Regular communication between partners through teleconferences/skype
- A closing meeting involving the surrounding countries of the candidate lab to inform the knowledge and experience gained through the twinning project and to invite for regional collaboration
- Project closure
## Regional distribution of laboratory twinning projects
### Both completed and ongoing (August 2018)

<table>
<thead>
<tr>
<th>Disease</th>
<th>Asia</th>
<th>Africa</th>
<th>Middle East</th>
<th>Americas</th>
<th>Europe</th>
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<tr>
<td>Rabies</td>
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<td>-</td>
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</tr>
<tr>
<td>ASF</td>
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<td>2</td>
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<td>-</td>
<td>1</td>
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<td>Aquatic diseases</td>
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<tr>
<td>Equine diseases</td>
<td>4</td>
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<tr>
<td>Overall projects total</td>
<td>24</td>
<td>26</td>
<td>8</td>
<td>13</td>
<td>6</td>
</tr>
</tbody>
</table>
OIE Laboratory Twinning Projects

Parent laboratories
- Projects completed
- Projects on-going

Candidate laboratories
- Projects completed
- Projects on-going
Contribution of twinning to OIE Reference Centre network

Adopted (May 2012)

- RABIES – Changchun Veterinary Research Institute, China (People’s Rep. of)
- AVIAN MYCOPLASMOSIS – National Centre for Animal and Plant Health, Cuba
- CONTAGIOUS BOVINE PLEUROPNEUMONIA (CBPP) – National Veterinary Laboratory, Botswana

Adopted (May 2014)

- INFECTIOUS SALMON ANAEMIA – Aquaculture Pathology Laboratory, Chile
- OIE Collaborating Centre for VETERINARY EPIDEMIOLOGY AND PUBLIC HEALTH – China Animal Health and Epidemiology Centre (CAHEC), China (People’s Rep. of)

Adopted (May 2016)

- BRUCELLOSIS – National Institute of Animal Health, Thailand
- AVIAN INFLUENZA – Laboratório Nacional Agropecuário em Campinas – Lanagro-SP, Brazil
- NEWCASTLE DISEASE – Laboratório Nacional Agropecuário em Campinas – Lanagro-SP, Brazil

Adopted (May 2018)

- INFECTIOUS BURSAL DISEASE – Harbin Veterinary Research Institute, Chinese Academy of Agricultural Sciences, Harbin, China (People’s Rep. of)
- AVIAN INFLUENZA – Federal Centre for Animal Health (FGBI-ARRIAH), Vladimir, Russia
- NEWCASTLE DISEASE – Federal Centre for Animal Health (FGBI-ARRIAH), Vladimir, Russia
- INFECTIOUS HAEMATOPOIETIC NECROSIS - Animal and Plant Inspection and Quarantine Technical Centre, China (People’s Rep. of)
- VIRAL HAEMORRHAGIC SEPTICAEMIA - Aquatic Animal Quarantine Laboratory, National Fishery Products Quality Management Service, Ministry of Oceans & Fisheries, Korea (Rep. of)
Conclusions

- Twinning concept is functioning well
- The laboratory Twinning Programme has made important contributions to improve the global disease control capacity for TADs
- Countries in all regions are benefiting
- OIE twinning is addressing the current bias in the geographical distribution of OIE RL/CC
- Both Terrestrial and aquatic diseases are addressed by OIE twinning projects
- Post twinning phase is very critical to achieve the OIE RC status