



# Australian Animal Health Laboratory

Lessons learnt from experience of OIE Twinning Projects

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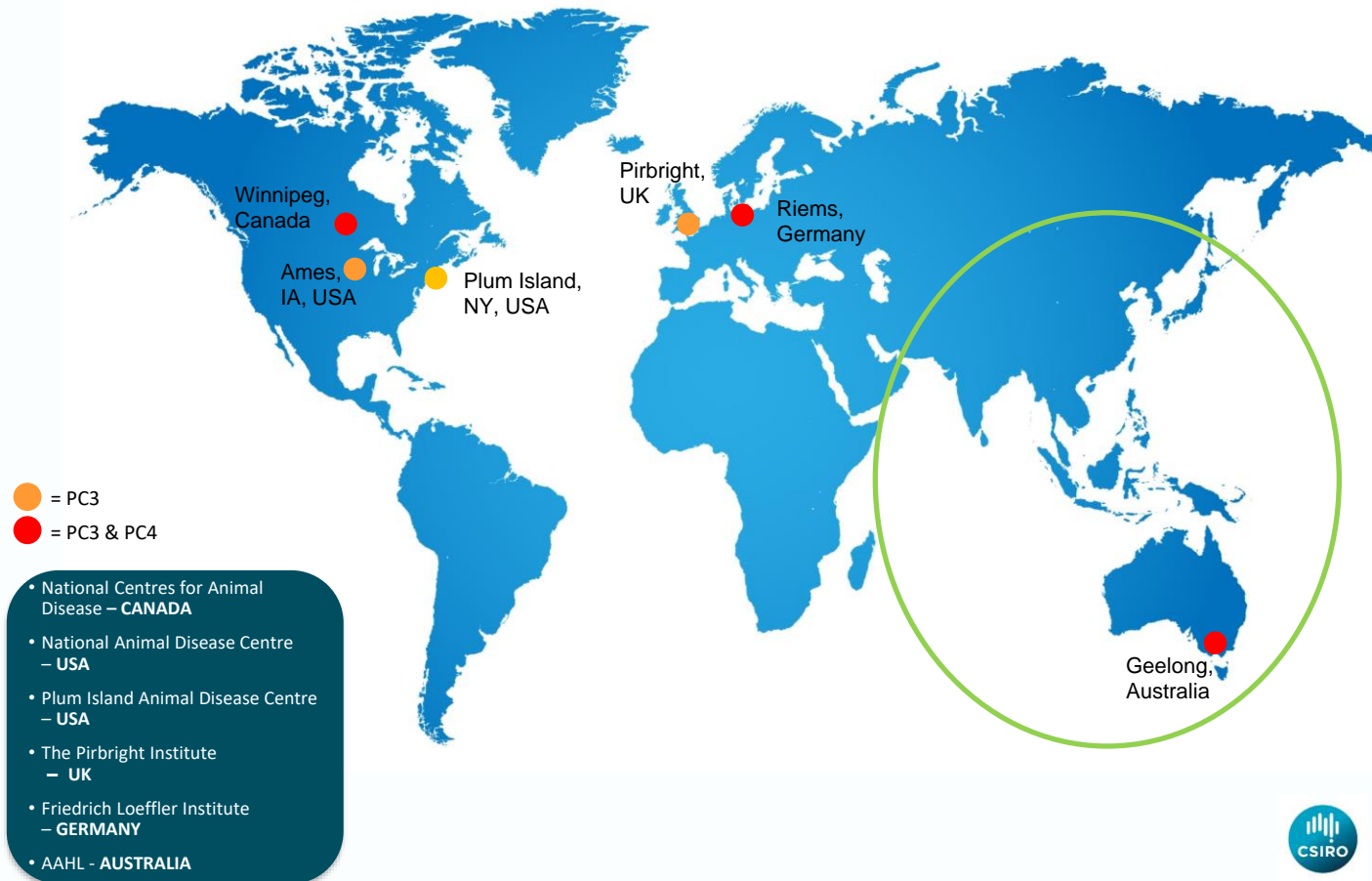
4 October 2017

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# AAHL: Australia's biocontainment laboratory

- part of a global network of animal health and zoonotic disease labs



# AAHL's International Reference Laboratory Designations

**OIE Collaborating  
Centre for Veterinary  
Laboratory Capacity  
Building**

**OIE Collaborating  
Centre for New and  
Emerging Diseases**

**OIE Reference  
Laboratory for 8  
diseases**

**FAO Reference  
Centre for Animal  
Influenza and  
Newcastle Disease**

**WHO Collaborating  
Centre for SARS**

**FAO Reference  
Centre for  
Laboratory Biological  
Risk Management**

# Previous and current twinning projects



# OIE Laboratory Twinning Project for EID preparedness in the ASEAN region

- With National Institute of Animal Health (NIAH), Thailand
- Commenced 1 January 2015
  - Countersigned by OIE 11 February 2015
- Completion date 31 December 2017
- Goals
  - Enhanced EID preparedness and response delivery in ASEAN region
  - Technology transfer and mutual test development for EIDs
  - Develop systems for internet based consultation
    - QA and monitoring
    - Diagnostic test results and disease investigations



# OIE Laboratory Twinning Project for Avian Influenza and Newcastle Disease

- With Veterinary Research Institute (VRI), Ipoh, Malaysia
- Commenced 18 December 2009
  - OIE countersigned contract 30 March 2010
- Completion date 31 August 2011
  - Extended to 31 December 2012 under a no cost extension agreed to by all parties
- Goal
  - At the conclusion of this twinning project, it was anticipated that the VRI would have the necessary technical capacity and quality assurance standards to apply for OIE Regional Reference Laboratory status in the fields AI and ND in South East Asia.

# Activities undertaken in the project

- Training visits of VRI staff to AAHL

Dates	Focus	Number of staff
12/10/2009 – 30/10/2009	Conventional and Real time PCR, serology, antigen cartography, lab and QA procedures; focus on AI	3
19/04/2010 – 24/04/2010	Biosecurity and biosafety; decontamination and calibration of lab equip	2
09/05/2010 – 30/05/2010	Molecular diagnostics, sequencing and sequence analysis training	1
19/08/2010	BSL3 Facility training	4

- Training visits by AAHL staff to VRI

Length of time	Focus	Number of staff
2010: 4 weeks	Serology and QA procedures, with focus on AI; Molecular diagnostics, sequencing and sequence analysis training	4
2011: 6 weeks	Establishing proficiency testing; QA and auditing; Molecular training	7
2012: 3 weeks	BSL3 assessment; establish reference virus cultures, antigens and antisera	4

# Deliverables

- Provision of reference materials
  - VRI supplied with reference antigens and antisera against a range of H5N1 strains and Newcastle disease, including reference materials for molecular diagnostics
- Provision of training material
- Internal audit report
- Proficiency testing and report



# Challenges

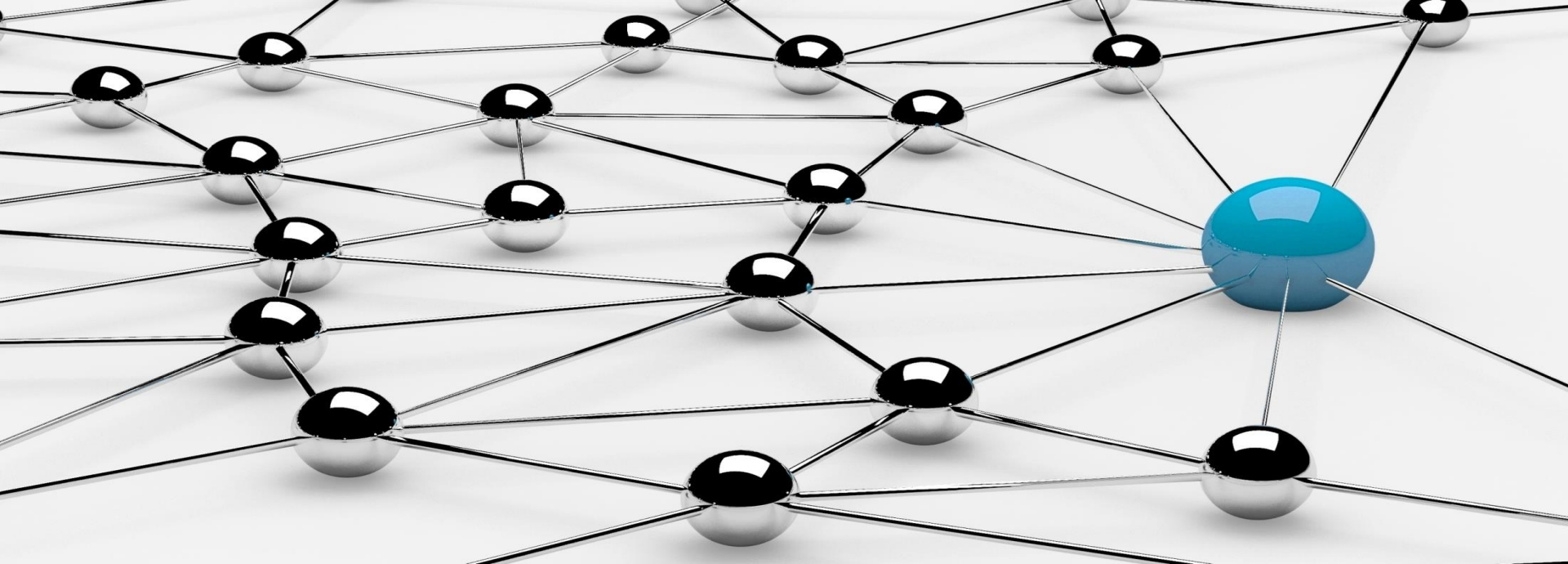
- Retaining staff / staff continuity: Maintaining continuity of relationships and progression of expertise when staff change frequently
- Inability for VRI to quickly obtain import permits in order to receive samples from suspect outbreaks in other countries in the region
- Cost of diagnostic reagents for specialized security-sensitive, highly pathogenic agents such as H5N1

# Recommendations: Project development and management processes

- Need increased transparency in twinning program development processes
- Develop additional alternatives to twinning programs for delivering strategic outcomes
  - For example, short-term consulting model versus 3 year twinning program
- Increased flexibility in program funding, administration and contracting
- Negotiating contract variations (especially start dates)

# Recommendations: Encouraging multi-level engagement with partners

- At the laboratory level, focusing on Directors and the leadership teams
- At the national level, focusing on the
  - CVOs
  - OIE Delegates
  - Parent departments
- For One Health focused projects, expand expertise to include Public Health practitioners perhaps via WHO twinning.
  - Twinning proposals could involve more than 2 laboratories (e.g. Triplet or Quad proposals) so that One Health project proposals involving Public Health (parent and candidate laboratories) and Animal Health (parent and candidate laboratories) could be developed.



# Networking Laboratories in SE Asia

PT activities and capacity building

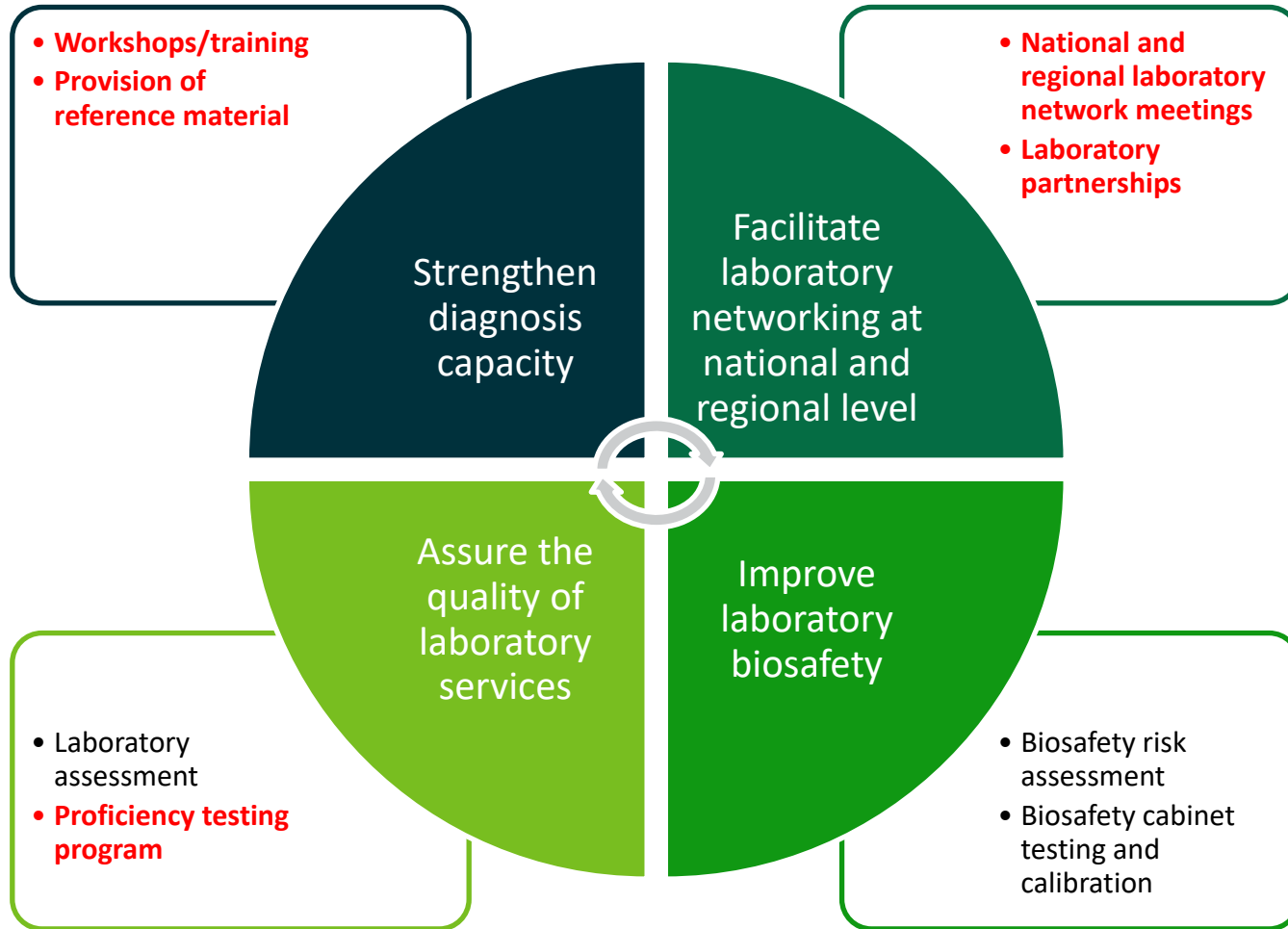
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# Veterinary Laboratory Networks

- Emerging infectious disease (EID) control must be underpinned by effective laboratory services.
- Management of laboratories is best done through a network of support.
- Laboratory output can be ensured through quality assurance.
- Active networks = enhance EID preparedness across the region.
- AIM: Build veterinary laboratory capability
- AAHL as a reference laboratory and in collaboration
  - Reference reagents
  - Provision of External quality assurance programmes
  - Test methods
  - Technology transfer
  - Training

# Technical Scope





# South East Asia (SEA) Activities



- Working with FAO the intention has been to strengthen diagnostic capacities through the development of laboratory networks spanning animal and human sectors.
- **External quality assurance management (EQA) for diagnosis of targeted diseases**
  - *Support proficiency testing for priority diseases selected by the region*
- Influenza PT has been run in the region since 2009
  - PCR and Serology 2009-2014
  - PCR (Avian Diseases and HxNx) 2015-2017

# Successes

- **Deliver of diagnostic capability** to the jurisdictional laboratories, eg. regional SOP development (Influenza A PCR)
- The provision of regional PT has resulted in **improved network harmonization of test methods and confidence in the network.**
- Backstopping missions – **assist, advise and troubleshoot** identified problems.
- **Representation** at annual meetings of the FAO /OIE Sub-Regional Laboratory Network Meetings on Laboratory Strengthening for Emerging Infectious Diseases Diagnosis in Asia Pacific
- **Ongoing distribution of emergency quality assured H7N9 (& H5N6) reagents** to south Asia and SE Asia country networks supported the objectives of the OIE/FAO network of expertise on animal influenza (OFFLU) – supplemented with PT activities

# A(H7N9) – FAO targeted risk-based surveillance in at-risk countries bordering China

Total number of samples (mostly chicken) collected in at-risk countries from April 2013 to October 2014 (active & retrospective sampling)

	Virological samples	Serological samples	Total
Bangladesh	11333	2235	13568
Bhutan	780	4058	4838
Lao PDR	3843		3843
Myanmar	18827	2009	20836
Nepal	2204	798	3002
Viet Nam	33480		33480
Total	70467	9100	79567

→ Avg. 1.9%–36.3% virological samples were FluA positive per country

→ No A(H7N9) detected outside CHN

AAHL assisted by production and distribution of A(H7N9) diagnostic kits to region under FAO Program (funded by USAID):

- H7 & N9 PCR primers/probe (8000x rxn kits each to 10 countries)
- Inactivated A/Anhui/1/2013 reference control
- A(H7N9) chicken antisera for serology (HI)

# First detection of emergent novel A(H5N6) HPAI virus outside of China in Laos, Mar 2014



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Volume 21, Number 3—March 2015

Dispatch

### Reassortant Highly Pathogenic Influenza A(H5N6) Virus in Laos

Frank Y.K. Wong✉, Phouvang Phommachanh, Wantanee Kalpravidh, Chintana Chanthavisouk, Jeffrey Gilbert, John Bingham, Kelly R. Davies, Julie Cooke, Debbie Eagles, Sithong Phiphakhavong, Songhua Shan, Vittoria Stevens, David T. Williams, Phachone Bounma, Bounkhouang Khambounheuang, Christopher Morrissy, Bounlom Douangneun, and Subhash Morzaria



RESEARCH ARTICLE

## Novel Reassortant H5N6 Influenza A Virus from the Lao People's Democratic Republic Is Highly Pathogenic in Chickens

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# Thank you

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